

Project No. 1251-100
Crude Oil Tank Farms Project, Agrood Area 30 (Module-1)



EGPC

System ID	030-EL-017
System Description	Electrical Power Module-1 System

Sr.	Pre-Commissioning and Commissioning Dossier Index	Applicable (Yes/No)
1	Mechanical Completion Certificate (MCC)	
2	Ready for Startup Certificate (RFSU)	
3	System Punch Lists	
4	System Limits Marked Up P&ID	
5	System Index	
6	Piping Pre-Commissioning	
	6.01) Piping Test Packs	
	6.02) Piping Pre-commissioning Check Lists	
7	Piping Commissioning	
	7.01) Service Test, GLT, CLT and N2 Purging Certificates	
	7.02) Piping Commissioning Check Lists	
Sr.	Pre-Commissioning and Commissioning Dossier Index	Applicable (Yes/No)
8	Mechanical Pre-Commissioning	
	8.01) System Mechanical Index	
	8.02) Equipment Drawings	
	8.03) Equipment Datasheets	
	8.04) Boxing-up Certificates	

	8.05) Grouting Certificates	
	8.06) Pre-Alignment Certificates	
	8.07) Mechanical Pre-Commissioning Checklists	
9	Mechanical Commissioning	
	9.01) Final Alignment Certificates	
	9.02) Motor Solo Run Certificates	
	9.03) Mechanical Run Test (MRT) Certificates	
	9.04) Mechanical Commissioning Checklists	
	9.05) Mechanical Supplier Check Lists & Reports	
10	Instrumentation Pre-Commissioning	
	10.01) System Instrument Index	
	10.02) Instrument Data Sheets	
	10.03) Instrument Cable Schedule	
	10.04) System Instrumentation Wiring Diagram	
	10.05) Hook-up Drawing (Mechanical & Pneumatic)	
	10.06) Instruments Cables Schedule	
	10.07) Instruments Cables Laying Certificates	
	10.08) Instruments Cables Termination Certificates	
	10.09) Instruments Cables Testing Certificates	
	10.10) Instruments Calibration Certificates	
	10.11) Instrument Loop Checks Certificates	
	10.12) Instrumentation Pre-Commissioning Check Lists	
	10.13) Instrumentation Supplier Check Lists & Reports	
11	Instrumentation Commissioning	
	11.01) Instrumentation Function Test Certificates	
	11.02) Instrumentation Supplier Check Lists & Reports	
Sr.	Pre-Commissioning and Commissioning Dossier Index	Applicable (Yes/No)
12	Electrical Pre-Commissioning	
	12.01) System Electrical Index	
	12.02) Electrical Drawings	
	12.03) Motor Datasheets	
	12.04) Electrical Cables Schedule	
	12.05) Electrical Cables Laying Certificates	
	12.06) Electrical Cables Testing Certificates	
	12.07) Electrical Cables Termination Certificates	
	12.08) FAT Reports & Certificates	
	12.09) SAT Reports & Certificates	
	12.10) Electrical Pre-Commissioning Check Lists	
	12.11) Electrical Supplier Check Lists & Reports	

13	Electrical Commissioning	
	13.01) Electrical -Commissioning Check Lists	
	13.02) Electrical Supplier Check Lists & Reports	
14	Red Marked-up Drawings	
	14.01) P&ID	
	14.02) Instrumentation Drawings	
	14.03) Electrical Drawings	



Project: 01251-100
CRUDE OIL TANK FARM PROJECT (AGROOD AREA)



System ID	030-EL-017
System Description	Electrical Power Module-1 System

1-Mechanical Completion Certificate (MCC)



SYSTEM MECHANICAL COMPLETION CERTIFICATE (MCC)

PROJECT TITLE : CRUDE OIL TANK FARM PROJECT (AGROOD AREA)

PROJECT No : 01251-100

SYSTEM NAME : Electrical Power Module-1 System

SYSTEM ID : 030-EL-017

THIS IS TO CERTIFY THAT:

- THE ABOVE SYSTEM HAS BEEN FABRICATED, ERECTED, INSTALLED AND TESTED TO THE REQUIREMENTS OF THE CONTRACT DRAWINGS, SPECIFICATIONS, THE APPLICABLE CODES AND STANDARDS.
- ALL PRE-COMMISSIONING RELEVANT ACTIVITIES, TESTS, INSPECTIONS AND CHECKS HAVE BEEN CARRIED OUT FOR THIS SYSTEM AND FOUND ACCEPTABLE.
- Q/C DOCUMENTATION OF THE ABOVE SYSTEM HAS BEEN AUDITED BY THE CUSTOMER SITE QUALITY CONTROL AND FOUND COMPLETED.
- ALL PUNCH LIST ITEMS CATEGORY (A) IN THIS SUBSYSTEM WERE CLEARED.
- THIS SYTEM IS MECHANICALLY COMPLETED ON THE DATE AND READY FOR COMMISSIONING (RFC) WITH THE FOLLOWING EXCEPTIONS.

EXCEPTIONS :

COMPANY	PETROJET	ENPPI	PMC
NAME	Sobhy Seleem	Mohamed Abbas	Mohamed Tibrachem
TITLE	QcESI engineer	Construction Mgr	Elec. Engineer
SIGNATURE			
DATE	2/9/2021		2/9/2021



Project: 01251-100
CRUDE OIL TANK FARM PROJECT (AGROOD AREA)



System ID	030-EL-017
System Description	Electrical Power Module-1 System

2- Ready for Startup Certificate (RFSU)

READY FOR START UP CERTIFICATE

PROJECT TITLE : EGPC CRUDE OIL TANK FARMS PROJECT (AGROOD-30)

PROJECT No. : 1251-100

SYSTEM /AREA /PLANT : Electrical Power Module-1 System


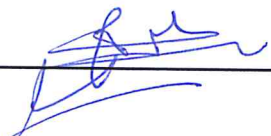
SYSTEM /AREA /PLANT No. : 030-EL-017

THIS IS TO CERTIFY THAT:

- THE MENTIONED SYSTEM /AREA /PLANT IS READY FOR START UP WHERE ALL MECHANICAL WORKS, PRECOMMISSIONING AND COMMISSIONING ACTIVITIES HAVE BEEN SUCCESSFULLY COMPLETED.
- MECHANICAL COMPLETION CERTIFICATE(S) FOR THE MENTIONED SYSTEM / AREA / PLANT HAVE BEEN SIGNED.
- ISSUANCE OF THIS READY FOR START UP CERTIFICATE(S) SHALL NOT RELIEVE CONTRACTOR(S) FROM THEIR OBLIGATIONS TO COMPLETE THE REMAINING SYSTEMS NOR FROM THEIR WARRANTY OBLIGATIONS AND OTHER PROVISIONS OF THE CONTRACT.
- THE FOLLOWING EXCEPTIONS AGREED TO BE CLEARED AFTER START UP AND WILL NOT PREVENT START UP ACTIVITIES.

EXCEPTIONS:

*HVAC SAT to be performed.

COMPANY	ENPPI	PPC
NAME	Ahmed El Sharie	Mohamed Ibrahim
TITLE	Commissioning Manager	Elec. Manager
SIGNATURE		
DATE		

System ID	030-EL-017
System Description	Electrical Power Module-1 System

3- System Punch Lists

PUNCH LIST

PROJECT TITLE : CRUDE OIL TANK FARM(AGROOD AREA)

PROJECT NUMBER : 1251-100

DISCIPLINE :

SYSTEM NAME : Electrical Power Module-1 System

SYSTEM ID : 030-EL-17

SUB-SYSTEM NAME :

SUB-SYSTEM ID :

No	DESCRIPTION	CAT	ACTION BY	DISP	CLEARANCE APPROVED BY
1	Earthing to be installed and tested	A	PTJ	elec	<i>[Signature]</i>
2	Cable tray Covers to be installed <i>Cancel</i>	B	PTJ	elec	<i>Cancel</i>
3	Mat For all Cables to be Installed <i>link</i>	B	PTJ	elec	
4	Earthing bit to be Installed	A	PTJ	elec	<i>[Signature]</i>
5	lightning system to be Connected to the Earthing System	A	PTJ	elec	<i>[Signature]</i>
6	Cable to be Connected and tested From/to tank-01	A	PTJ	elec	<i>[Signature]</i>
7	stairs FDN to be done	B	PTJ	civil	<i>[Signature]</i>
8	Panel Box Piling & leveling to be done	C	PTJ	civil	<i>[Signature]</i>

CAT: CATEGORY (A,B,C) , ACTION BY: (ENPPI, CONST. CONTRACTOR, SUPPLIER...), DISP: DISCIPLINE (PIP, MECH, ELECT, INST...)

COMPANY	PETROJET	ENPPI	SUMED <i>pmc</i>
NAME	Sabhy Sekeem		
SIGNATURE	<i>Sabhy</i>	<i>Islam Sherif</i>	<i>[Signature]</i>
DATE	<i>[Signature]</i>		



Project: 01251-100
CRUDE OIL TANK FARM PROJECT (AGROOD AREA)



System ID	030-EL-017
System Description	Electrical Power Module-1 System

4- System Limits Marked Up P&ID

System ID	030-EL-017
System Description	Electrical Power Module-1 System

5- System Index



Project: 01251-100
CRUDE OIL TANK FARM PROJECT (AGROOD AREA)



System ID	030-EL-017
System Description	Electrical Power Module-1 System

6- Piping Pre-Commissioning



Project: 01251-100
CRUDE OIL TANK FARM PROJECT (AGROOD AREA)



System ID	030-EL-017
System Description	Electrical Power Module-1 System

6.01- Piping Test Packs



Project: 01251-100
CRUDE OIL TANK FARM PROJECT (AGROOD AREA)



System ID	030-EL-017
System Description	Electrical Power Module-1 System

6.02- Piping Pre-commissioning Check Lists

System ID	030-EL-017
System Description	Electrical Power Module-1 System

7- Piping Commissioning



Project: 01251-100
CRUDE OIL TANK FARM PROJECT (AGROOD AREA)



System ID	030-EL-017
System Description	Electrical Power Module-1 System

7.01- Service Test, GLT, CLT and N2 Purging Certificates



Project: 01251-100
CRUDE OIL TANK FARM PROJECT (AGROOD AREA)



System ID	030-EL-017
System Description	Electrical Power Module-1 System

7.02- Piping Commissioning Check Lists

System ID	030-EL-017
System Description	Electrical Power Module-1 System

8- Mechanical pre-Commissioning



Project: 01251-100
CRUDE OIL TANK FARM PROJECT (AGROOD AREA)



System ID	030-EL-017
System Description	Electrical Power Module-1 System

8.01- System Mechanical Index



Project: 01251-100
CRUDE OIL TANK FARM PROJECT (AGROOD AREA)



System ID	030-EL-017
System Description	Electrical Power Module-1 System

8.02- Equipment Drawings



Project: 01251-100
CRUDE OIL TANK FARM PROJECT (AGROOD AREA)



System ID	030-EL-017
System Description	Electrical Power Module-1 System

8.03- Equipment Datasheets



Project: 01251-100
CRUDE OIL TANK FARM PROJECT (AGROOD AREA)



System ID	030-EL-017
System Description	Electrical Power Module-1 System

8.04- Boxing-up Certificates



Project: 01251-100
CRUDE OIL TANK FARM PROJECT (AGROOD AREA)



System ID	030-EL-017
System Description	Electrical Power Module-1 System

8.05- Grouting Certificates



Project: 01251-100
CRUDE OIL TANK FARM PROJECT (AGROOD AREA)



System ID	030-EL-017
System Description	Electrical Power Module-1 System

8.06- Pre-Alignment Certificates



Project: 01251-100
CRUDE OIL TANK FARM PROJECT (AGROOD AREA)



System ID	030-EL-017
System Description	Electrical Power Module-1 System

8.07- Mechanical Pre-Commissioning Checklists



Project: 01251-100
CRUDE OIL TANK FARM PROJECT (AGROOD AREA)



System ID	030-EL-017
System Description	Electrical Power Module-1 System

9- Mechanical Commissioning



Project: 01251-100
CRUDE OIL TANK FARM PROJECT (AGROOD AREA)



System ID	030-EL-017
System Description	Electrical Power Module-1 System

9.01- Final Alignment Certificates



Project: 01251-100
CRUDE OIL TANK FARM PROJECT (AGROOD AREA)



System ID	030-EL-017
System Description	Electrical Power Module-1 System

9.02- Motor Solo Run Certificates



Project: 01251-100
CRUDE OIL TANK FARM PROJECT (AGROOD AREA)



System ID	030-EL-017
System Description	Electrical Power Module-1 System

9.03- Mechanical Run Test (MRT) Certificates



Project: 01251-100
CRUDE OIL TANK FARM PROJECT (AGROOD AREA)



System ID	030-EL-017
System Description	Electrical Power Module-1 System

9.04- Mechanical Commissioning Checklists



Project: 01251-100
CRUDE OIL TANK FARM PROJECT (AGROOD AREA)



System ID	030-EL-017
System Description	Electrical Power Module-1 System

9.05- Mechanical Supplier Check Lists & Reports



Project: 01251-100
CRUDE OIL TANK FARM PROJECT (AGROOD AREA)



System ID	030-EL-017
System Description	Electrical Power Module-1 System

10- Instrumentation Pre-Commissioning



Project: 01251-100
CRUDE OIL TANK FARM PROJECT (AGROOD AREA)



System ID	030-EL-017
System Description	Electrical Power Module-1 System

10.01- System Instrument Index



Project: 01251-100
CRUDE OIL TANK FARM PROJECT (AGROOD AREA)



System ID	030-EL-017
System Description	Electrical Power Module-1 System

10.02- Instrument Data Sheets



Project: 01251-100
CRUDE OIL TANK FARM PROJECT (AGROOD AREA)



System ID	030-EL-017
System Description	Electrical Power Module-1 System

10.03- Instrument Cable Schedule

System ID	030-EL-017
System Description	Electrical Power Module-1 System

10.04- System Instrumentation Wiring Diagram



Project: 01251-100
CRUDE OIL TANK FARM PROJECT (AGROOD AREA)



System ID	030-EL-017
System Description	Electrical Power Module-1 System

10.05- Hook-up Drawing (Mechanical & Pneumatic)



Project: 01251-100
CRUDE OIL TANK FARM PROJECT (AGROOD AREA)



System ID	030-EL-017
System Description	Electrical Power Module-1 System

10.06- Instruments Cables Schedule



Project: 01251-100
CRUDE OIL TANK FARM PROJECT (AGROOD AREA)



System ID	030-EL-017
System Description	Electrical Power Module-1 System

10.07- Instruments Cables Laying Certificates



Project: 01251-100
CRUDE OIL TANK FARM PROJECT (AGROOD AREA)



System ID	030-EL-017
System Description	Electrical Power Module-1 System

10.08- Instruments Cables Termination Certificates

System ID	030-EL-017
System Description	Electrical Power Module-1 System

10.09- Instruments Cables Testing Certificates



Project: 01251-100
CRUDE OIL TANK FARM PROJECT (AGROOD AREA)



System ID	030-EL-017
System Description	Electrical Power Module-1 System

10.10- Instruments Calibration Certificates



Project: 01251-100
CRUDE OIL TANK FARM PROJECT (AGROOD AREA)



System ID	030-EL-017
System Description	Electrical Power Module-1 System

10.11- Instrument Loop Checks Certificates



Project: 01251-100
CRUDE OIL TANK FARM PROJECT (AGROOD AREA)



System ID	030-EL-017
System Description	Electrical Power Module-1 System

10.12- Instrumentation Pre-Commissioning Check Lists



Project: 01251-100
CRUDE OIL TANK FARM PROJECT (AGROOD AREA)



System ID	030-EL-017
System Description	Electrical Power Module-1 System

10.13- Instrumentation Supplier Check Lists & Reports

System ID	030-EL-017
System Description	Electrical Power Module-1 System

11- Instrumentation Commissioning



Project: 01251-100
CRUDE OIL TANK FARM PROJECT (AGROOD AREA)



System ID	030-EL-017
System Description	Electrical Power Module-1 System

11.01) Instrumentation Function Test Certificates



Project: 01251-100
CRUDE OIL TANK FARM PROJECT (AGROOD AREA)



System ID	030-EL-017
System Description	Electrical Power Module-1 System

11.02- Instrumentation Supplier Check Lists & Reports



Project: 01251-100
CRUDE OIL TANK FARM PROJECT (AGROOD AREA)



System ID	030-EL-017
System Description	Electrical Power Module-1 System

12- Electrical Pre-Commissioning



Project: 01251-100
CRUDE OIL TANK FARM PROJECT (AGROOD AREA)



System ID	030-EL-017
System Description	Electrical Power Module-1 System

12.01- System Electrical Index

030-EL-017
030-EL-017
030-EL-017

Electrical Power Module-1 System
Electrical Power Module-1 System
Electrical Power Module-1 System

Electrical
Electrical
Electrical

PRODUCT LINE-1
C-030-EPMI-LVSWG
P-030-EPMI-DP-2
P-030-EPMI-UPDP-1

HV Cable
LV Cable
LV Cable
LV Cable

Checklist
Checklist
Checklist
Checklist

EL-31 A
EL-31 A
EL-31 A
EL-31 A



Project: 01251-100
CRUDE OIL TANK FARM PROJECT (AGROOD AREA)



System ID	030-EL-017
System Description	Electrical Power Module-1 System

12.02- Electrical Drawings



Project: 01251-100
CRUDE OIL TANK FARM PROJECT (AGROOD AREA)



System ID	030-EL-017
System Description	Electrical Power Module-1 System

12.03- Motor Datasheets



Project: 01251-100
CRUDE OIL TANK FARM PROJECT (AGROOD AREA)



System ID	030-EL-017
System Description	Electrical Power Module-1 System

12.04- Electrical Cables Schedule

AGE+AI:L3	Cable Mark	GL1	FROM	TO	GL2	CABLEService	Service Voltage	KW	Size	Type	L
42	P-030-EPMI-TR-1	WP	030-SUB-HVSWG-6.6 (Q2A)	030-EPMI-TR-1	WP	HV POWER FEEDER	660VAC	500	3x70	3A	370
42	C-030-EPMI-1.VSWG	WP	030-EPMI-1.VSWG (A1.1)	030-SUB-HVSWG-6.6 (Q2A)	WP	INTERTRIP			10x2.5	C1	370
42	P-030-EPMI-UIPP-1	WP	030-SUB-ACUPS-1	030-EPMI-UIPP-1	WP	3PH POWER FEEDER	400VAC	5.0	3.5x50	4B	370
43	P-030-EPMI-DP-2	WP	030-EPMI-1.VSWG-1 (A2.2)	030-EPMI-DP-2	WP	3PH POWER FEEDER	400VAC	40	4x25		

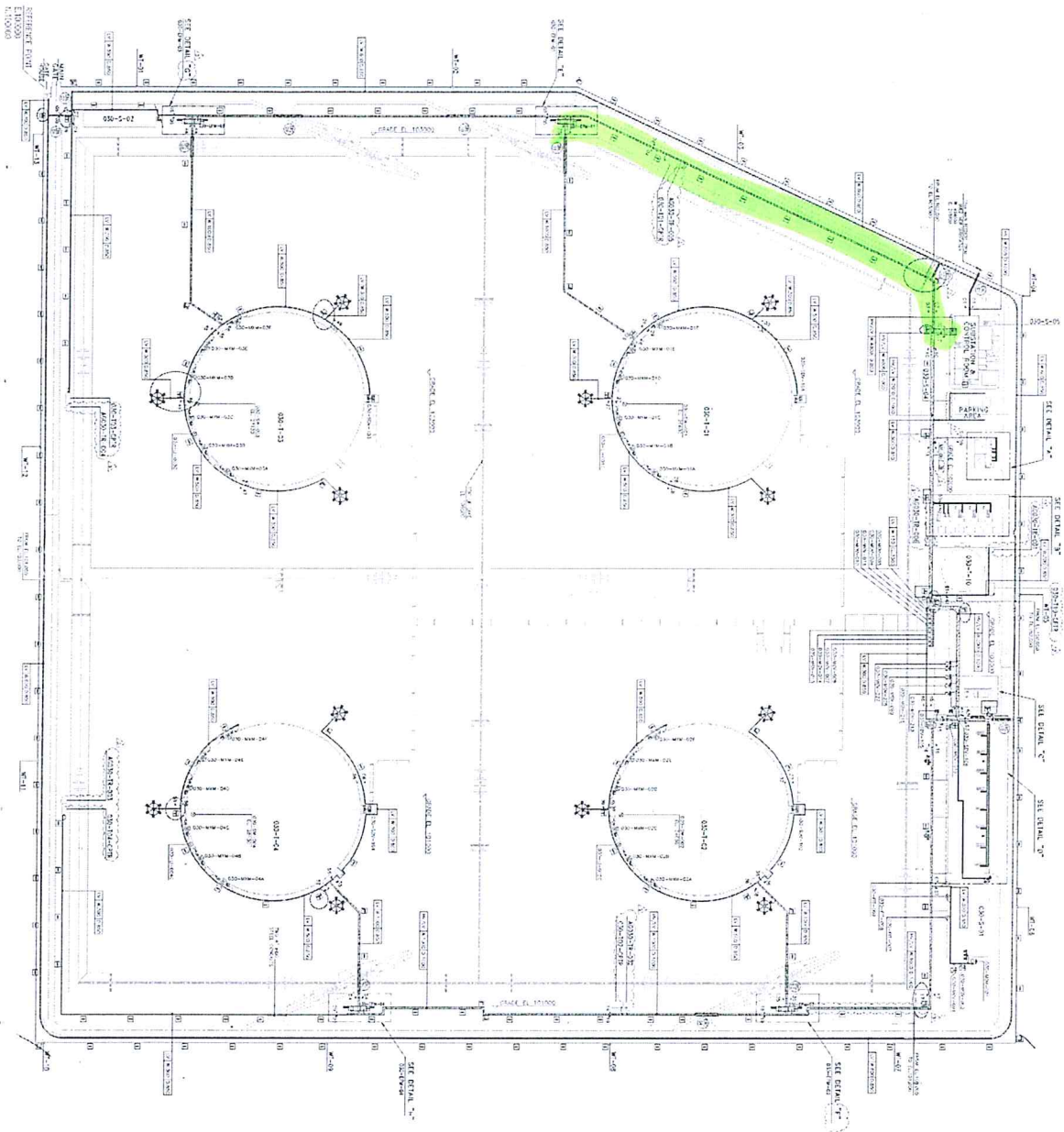


Project: 01251-100
CRUDE OIL TANK FARM PROJECT (AGROOD AREA)



System ID	030-EL-017
System Description	Electrical Power Module-1 System

12.05- Electrical Cables Laying Certificates



Scale: 1:1000
 0 10 20 30 40 50 60 70 80 90 100

EGPC CRUDE OIL TANK FARM
 ASSESSMENT AREA (MODULE-1)
 OUTDOOR ELECTRICAL CABLE ROUTING LAYOUT

EGPC

11/000 01231-100-030-CL-001 01/02 3

LEGEND

- 1. CRUDE OIL TANK
- 2. CRUDE OIL TANK FOUNDATION
- 3. CRUDE OIL TANK ROOF
- 4. CRUDE OIL TANK WALL
- 5. CRUDE OIL TANK FLOOR
- 6. CRUDE OIL TANK CEILING
- 7. CRUDE OIL TANK STAIR
- 8. CRUDE OIL TANK LIFT
- 9. CRUDE OIL TANK ESCAPE
- 10. CRUDE OIL TANK ENTRANCE
- 11. CRUDE OIL TANK EXIT
- 12. CRUDE OIL TANK DOOR
- 13. CRUDE OIL TANK WINDOW
- 14. CRUDE OIL TANK VENT
- 15. CRUDE OIL TANK PIPE
- 16. CRUDE OIL TANK VALVE
- 17. CRUDE OIL TANK FITTING
- 18. CRUDE OIL TANK FLANGE
- 19. CRUDE OIL TANK GASKET
- 20. CRUDE OIL TANK BOLT
- 21. CRUDE OIL TANK NUT
- 22. CRUDE OIL TANK WASHER
- 23. CRUDE OIL TANK LOCKWASHER
- 24. CRUDE OIL TANK CONWASHER
- 25. CRUDE OIL TANK CONWASHER
- 26. CRUDE OIL TANK CONWASHER
- 27. CRUDE OIL TANK CONWASHER
- 28. CRUDE OIL TANK CONWASHER
- 29. CRUDE OIL TANK CONWASHER
- 30. CRUDE OIL TANK CONWASHER

NOTES

1. CRUDE OIL TANK FOUNDATION SHALL BE CONCRETE.

2. CRUDE OIL TANK ROOF SHALL BE GALVANIZED STEEL.

3. CRUDE OIL TANK WALL SHALL BE REINFORCED CONCRETE.

4. CRUDE OIL TANK FLOOR SHALL BE GALVANIZED STEEL.

5. CRUDE OIL TANK CEILING SHALL BE GALVANIZED STEEL.

6. CRUDE OIL TANK STAIR SHALL BE GALVANIZED STEEL.

7. CRUDE OIL TANK LIFT SHALL BE GALVANIZED STEEL.

8. CRUDE OIL TANK ESCAPE SHALL BE GALVANIZED STEEL.

9. CRUDE OIL TANK ENTRANCE SHALL BE GALVANIZED STEEL.

10. CRUDE OIL TANK EXIT SHALL BE GALVANIZED STEEL.

11. CRUDE OIL TANK DOOR SHALL BE GALVANIZED STEEL.

12. CRUDE OIL TANK WINDOW SHALL BE GALVANIZED STEEL.

13. CRUDE OIL TANK VENT SHALL BE GALVANIZED STEEL.

14. CRUDE OIL TANK PIPE SHALL BE GALVANIZED STEEL.

15. CRUDE OIL TANK VALVE SHALL BE GALVANIZED STEEL.

16. CRUDE OIL TANK FITTING SHALL BE GALVANIZED STEEL.

17. CRUDE OIL TANK FLANGE SHALL BE GALVANIZED STEEL.

18. CRUDE OIL TANK GASKET SHALL BE GALVANIZED STEEL.

19. CRUDE OIL TANK BOLT SHALL BE GALVANIZED STEEL.

20. CRUDE OIL TANK NUT SHALL BE GALVANIZED STEEL.

21. CRUDE OIL TANK WASHER SHALL BE GALVANIZED STEEL.

22. CRUDE OIL TANK LOCKWASHER SHALL BE GALVANIZED STEEL.

23. CRUDE OIL TANK CONWASHER SHALL BE GALVANIZED STEEL.

24. CRUDE OIL TANK CONWASHER SHALL BE GALVANIZED STEEL.

25. CRUDE OIL TANK CONWASHER SHALL BE GALVANIZED STEEL.

26. CRUDE OIL TANK CONWASHER SHALL BE GALVANIZED STEEL.

27. CRUDE OIL TANK CONWASHER SHALL BE GALVANIZED STEEL.

28. CRUDE OIL TANK CONWASHER SHALL BE GALVANIZED STEEL.

29. CRUDE OIL TANK CONWASHER SHALL BE GALVANIZED STEEL.

30. CRUDE OIL TANK CONWASHER SHALL BE GALVANIZED STEEL.

PLAN

DEFINITION

1. CRUDE OIL TANK FOUNDATION SHALL BE CONCRETE.

2. CRUDE OIL TANK ROOF SHALL BE GALVANIZED STEEL.

3. CRUDE OIL TANK WALL SHALL BE REINFORCED CONCRETE.

4. CRUDE OIL TANK FLOOR SHALL BE GALVANIZED STEEL.

5. CRUDE OIL TANK CEILING SHALL BE GALVANIZED STEEL.

6. CRUDE OIL TANK STAIR SHALL BE GALVANIZED STEEL.

7. CRUDE OIL TANK LIFT SHALL BE GALVANIZED STEEL.

8. CRUDE OIL TANK ESCAPE SHALL BE GALVANIZED STEEL.

9. CRUDE OIL TANK ENTRANCE SHALL BE GALVANIZED STEEL.

10. CRUDE OIL TANK EXIT SHALL BE GALVANIZED STEEL.

11. CRUDE OIL TANK DOOR SHALL BE GALVANIZED STEEL.

12. CRUDE OIL TANK WINDOW SHALL BE GALVANIZED STEEL.

13. CRUDE OIL TANK VENT SHALL BE GALVANIZED STEEL.

14. CRUDE OIL TANK PIPE SHALL BE GALVANIZED STEEL.

15. CRUDE OIL TANK VALVE SHALL BE GALVANIZED STEEL.

16. CRUDE OIL TANK FITTING SHALL BE GALVANIZED STEEL.

17. CRUDE OIL TANK FLANGE SHALL BE GALVANIZED STEEL.

18. CRUDE OIL TANK GASKET SHALL BE GALVANIZED STEEL.

19. CRUDE OIL TANK BOLT SHALL BE GALVANIZED STEEL.

20. CRUDE OIL TANK NUT SHALL BE GALVANIZED STEEL.

21. CRUDE OIL TANK WASHER SHALL BE GALVANIZED STEEL.

22. CRUDE OIL TANK LOCKWASHER SHALL BE GALVANIZED STEEL.

23. CRUDE OIL TANK CONWASHER SHALL BE GALVANIZED STEEL.

24. CRUDE OIL TANK CONWASHER SHALL BE GALVANIZED STEEL.

25. CRUDE OIL TANK CONWASHER SHALL BE GALVANIZED STEEL.

26. CRUDE OIL TANK CONWASHER SHALL BE GALVANIZED STEEL.

27. CRUDE OIL TANK CONWASHER SHALL BE GALVANIZED STEEL.

28. CRUDE OIL TANK CONWASHER SHALL BE GALVANIZED STEEL.

29. CRUDE OIL TANK CONWASHER SHALL BE GALVANIZED STEEL.

30. CRUDE OIL TANK CONWASHER SHALL BE GALVANIZED STEEL.



Project: 01251-100
CRUDE OIL TANK FARM PROJECT (AGROOD AREA)



System ID	030-EL-017
System Description	Electrical Power Module-1 System

12.06- Electrical Cables Testing Certificates



EGPC CRUDE OIL TANK FARM



INSPECTION AND TEST REPORT FOR

CABLE INSULATION RESISTANCE TEST

INSPECTION REPORT NUMBER

INSPECTION DATE & TIME

DOCUMENT NO

DISCIPLINE

SHEET NO

SYSTEM NO.

RFL17

INSTRUMENT TYPE:

SERIAL:

SERVICE VOLTAGE:

TEST VOLTAGE:

AREA / PACKAGE:

220 v

1kv

N O	Item/Tag NO.	CABLE SIZE	Continuity Test	PHASE TO PHASE "M.Ohm"			PHASE TO NEUTRAL "M.Ohm"			PHASES & NEUTRAL TO ARMOR "M.Ohm"			RESULT	
				BR-BK	BR-GR	BK-GR	BR-B	BK-B	GR-B	BR-ARM	BK-ARM	GR-ARM		
1	P-030-SUB-PTC-1A	3 x 76	✓	0.1	0.1	0.1							✓	
2	P-030-SUB-PTC-1B	3 x 76	✓	0.1	0.1	0.1							✓	
3	P-030-EPMT-1R-1	3 x 76	✓	0.1	0.1	0.1							✓	
4	P-030-EPMT-3-1R-1	3 x 76	✓	0.1	0.1	0.1							✓	
5	P-030-EPMT-4-1R-1	3 x 76	✓	0.1	0.1	0.1							✓	
6														
7														
8														
9														
10														
11														
12														
13														
14														
15														
16														
17														
18														

Remarks :-

Reference :-

NAME:		PETROJET		ENPPI		PMC	
SIGNATURE:							
DATE							

ITR-EL-0006A



Enppi

EGPC CRUDE OIL TANK FARM



INSPECTION AND TEST REPORT FOR

CABLE INSULATION RESISTANCE TEST

INSPECTION REPORT NUMBER PTJ-ELE-RFI-	INSPECTION DATE & TIME 10/04/2021	DOCUMENT No. ITR-EL-0006B	DISCIPLINE ELEC	SYSTEM NO.:
INSTRUMENT TYPE: HIGH VOLTAGE INSULATION TESTER-SANWA-MG5000	SERIAL: 17015900385	SERVICE VOLTAGE: 24	TEST VOLTAGE: 500	SHEET NO
				AREA / PACKAGE:

NO	Item/Tag NO.	CABLE SIZE	Continuity Test	pair conductors	conductors to armor	Shield to Shield	All Conductors-GND	Overall Shield-GND	Armor-GND	RESULT
13	C2-030-PM-01A	12x2.5	✓	See ✓				>500 MΩ		✓
14	C2-030-PM-01B	12x2.5	✓	See ✓				>500 MΩ		✓
15	C2-030-PM-01C	12x2.5	✓	See ✓				>500 MΩ		✓
16	C2-030-PM-02	12x2.5	✓	See ✓				>500 MΩ		✓
17	C2-030-PM-06A	12x2.5	✓	See ✓				>500 MΩ		✓
18	C2-030-PM-06B	12x2.5	✓	See ✓				>500 MΩ		✓
19	C2-030-PM-06C	12x2.5	✓	See ✓				>500 MΩ		✓
20	C2-030-PM-06D	12x2.5	✓	See ✓				>500 MΩ		✓
21	C-030-EPMI-LVSWG	10x2.5	✓	See ✓				>500 MΩ		✓
22										
23										
24										

Remarks :-

Reference

NAME :	PETROJET	ENPPI	PMC
SIGNATURE			
DATE			



EGPC CRUDE OIL TANK FARM



मृग

CABLE INSULATION RESISTANCE TEST

INSPECTION AND TEST REPORT FOR

INSPECTION REPORT NUMBER

PTJ-ELE-RFI-

INSPECTION DATE & TIME

--	--

17015900385

.....VOLTAJE INSULACION RESISTENCIA-SANWA-MG5000

17015900385

SERVICE VOLTAGE: 400

TEST VOLTAGE: 1000

AREA / PACKAGE:

SUBSTATION

NO	Item/T ag NO.	CABLE SIZE	Continuity Test	SUBSTATION												
				PHASE TO PHASE			PHASE TO NUETRAL "M.Ohm"			PHASES & NUETRAL TO ARMOR "M.Ohm"			RESULT			
				BR-BK	BR-GR	BK-GR	BR-B	BK-B	GR-B	BR-ARM	BK-ARM	GR-ARM		B-ARM		
17	P-030-SUB-LPDP-1	3.5x120	✓	OL	OL	OL	OL								Pass	FAIL
18	P-030-SUB-ASP-1	3.5x120	✓	OL	OL	OL	OL								✓	
19	P-030-EPM1-UPDP-1	3.5x50	✓	OL	OL	OL	OL								✓	
20	P1-030-SUB-ACUPS-1	3x10	✓				OL								✓	
21	P-030-SUB-IRP-1	3x10	✓				OL								✓	
22	D-030-SUB-LVSWG-1A	3x10	✓				OL								✓	
23	D-030-SUB-LVSWG-1B	3x10	✓				OL								✓	
24	D-030-SUB-IRP-1	3x10	✓				OL								✓	
25	P1-030-SUB-LVSWG-1A	3x10	✓				OL								✓	
26	P1-030-SUB-LVSWG-1B	3x10	✓				OL								✓	
27	C1-030-SUB-ACUPS-1	3x2.5	✓				OL								✓	
28	C2-030-SUB-ACUPS-1	3x2.5	✓				OL								✓	
29	C1-030-SUB-DCUPS-1	3x2.5	✓				OL								✓	
30	C2-030-SUB-DCUPS-1	3x2.5	✓				OL								✓	
31	P-030-SUB-AVR-1A	3x4	✓				OL								✓	
32	P-030-SUB-AVR-1B	3x4	✓				OL								✓	

Remarks :-

Remarks :-

Reference :-

PETROJET

ENPPI

PMC

ITR-EL-0006A



Project: 01251-100
CRUDE OIL TANK FARM PROJECT (AGROOD AREA)



System ID	030-EL-017
System Description	Electrical Power Module-1 System

12.07- Electrical Cables Termination Certificates

**Enppi****EGPC CRUDE OIL TANK FARM**Owner : **Egyptian General Petroleum Corporation (EGPC)**Project No: 01251-100-030
:01251-100-031Contractor **CONSORTIUM (ENPPI / PETROJET)**Document No: ITR-QC-0001
Revision No. : 00**REQUEST FOR INSPECTION**ACTIVITY : **CABLE TERMINATION AND TEST**NOTIFICATION NO. : **PTJ-ELE-RFI-** DISCIPLINE : **ELEC**DATE : **27/03/2021**

NO.	DESCRIPTION	LOCATION	DATE / TIME	INSPECTION			REMARKS
				PETROJET	ENPPI	PMC	
18	D2-030-SUB-ACUPS-1-BAT-A	SUBSTATION					
19	D1-030-SUB-ACUPS-1-BAT-B	SUBSTATION					
20	D2-030-SUB-ACUPS-1-BAT-B	SUBSTATION					
21	D1-030-SUB-DCUPS-CB-A	SUBSTATION					
22	D2-030-SUB-DCUPS-CB-A	SUBSTATION					
23	D1-030-SUB-DCUPS-CB-B	SUBSTATION					
24	D2-030-SUB-DCUPS-CB-B	SUBSTATION					
25	D1-030-SUB-DCUPS-1-BAT-A	SUBSTATION					
26	D2-030-SUB-DCUPS-1-BAT-A	SUBSTATION					
27	D1-030-SUB-DCUPS-1-BAT-B	SUBSTATION					
28	D2-030-SUB-DCUPS-1-BAT-B	SUBSTATION					
29	P-030-SUB-LPDP-1	SUBSTATION					
30	P-030-SUB-ASP-1	SUBSTATION					
31	P-030-EPM1-UPDP-1	SUBSTATION					
32	P1-030-SUB-ACUPS-1	SUBSTATION					
33	P-030-SUB-IRP-1	SUBSTATION					
34	D-030-SUB-LVSWG-1A	SUBSTATION					

NOTE:

Inspection result : A - Approved B - Reject C - Approved with Comment

	PETROJET	ENPPI	PMC
NAME :			
SIGNATURE			
DATE			

ITR-QC-0001



EGPC CRUDE OIL TANK FARM



INSPECTION AND TEST REPORT FOR

CABLE TERMINATION AND SPLICING

SYSTEM NO.:

INSPECTION REPORT NUMBER

INSPECTION DATE & TIME

ITR NUMBER

DISCIPLINE

SHEET NO

PTJ-ELE-RFI-

27/03/2021

ITR-EL-0009

ELEC

1 OF 1

Item/Tag NO.

For All Cables tags in PTJ-ELE-RFI-

Type :-

Core:

Size:

NO.	Description of check	RESULT		
		ACCEPT	REJECT	N/A.
1	Check cable glands are correct type and size as per cable schedule.	✓		
2	Check there are no damages to cores, termination chamber layout is satisfactory, core identification is correct, crimped and pins satisfactory.	✓		
3	Check cable tag is done correctly.	✓		
4	Test and confirm conductor, phase continuity.	✓		
5	Check insulation resistance test (megger) is completed *I	✓		
6	Check Hi-pot test is completed, only for MV/HV cables *II			✓
7	Connect all cores at both ends and confirm all connections are correct as per termination diagram.	✓		
8	Confirm spare cores, screens are earthed and conform to design drawings/specifications	✓		✓
9	Check enclosure cover is installed, no damages and no bolts are missing	✓		
10	Calibration test certificate of testing equipment to be checked.	✓		

Remarks :

*I : ITR-EL-006A/B

*II : ITR-EL-008

	PETROJET	ENPPI	PMC
NAME :			
SIGNATURE			
DATE			

ITR-EL-0009

Owner : **Egyptian General Petroleum Corporation (EGPC)**

Project No: 01251-100-030
:01251-100-031

Contractor **CONSORTIUM (ENPPI / PETROJET)**

Document No: ITR-QC-0001
Revision No. : 00

REQUEST FOR INSPECTION

ACTIVITY : **CABLE TERMINATION AND TEST**

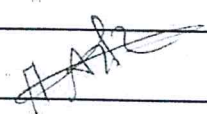
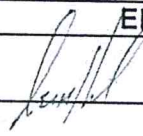
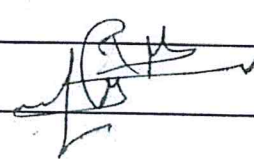
NOTIFICATION NO. : **PTJ-ELE-RFI-169** DISCIPLINE : **ELEC**

DATE : **10/04/2021**

NO.	DESCRIPTION	LOCATION	DATE / TIME	INSPECTION			REMARKS
				PETROJET	ENPPI	PMC	
35	P3-030-PLC-SC-003	SUBSTATION					
36	P3-030-PLC-SC-004	SUBSTATION					
37	P3-030-TGS-001	SUBSTATION					
38	P3-030-FGS-SC-001	SUBSTATION					
39	C2-030-PM-01A	SUBSTATION					
40	C2-030-PM-01B	SUBSTATION					
41	C2-030-PM-01C	SUBSTATION					
42	C2-030-PM-02	SUBSTATION					
43	C2-030-PM-06A	SUBSTATION					
44	C2-030-PM-06B	SUBSTATION					
45	C2-030-PM-06C	SUBSTATION					
46	C2-030-PM-06D	SUBSTATION					
47	M-030-PM-04A	SUBSTATION					
48	M-030-PM-04B	SUBSTATION					
49	M-030-PM-05A	SUBSTATION					
50	M-030-PM-05B	SUBSTATION					
51	P-030-P-16A	SUBSTATION					
52	P-030-P-16B	SUBSTATION					
53	C-030-EPM1-LVSWG	SUBSTATION					

NOTE:

Inspection result : A - Approved B - Reject C - Approved with Comment

	PETROJET	ENPPI	PMC
NAME :			
SIGNATURE			
DATE			

ITR-QC-0001



EGPC CRUDE OIL TANK FARM



INSPECTION AND TEST REPORT FOR

CABLE TERMINATION AND SPLICING

INSPECTION REPORT NUMBER

PTJ-ELE-RFI-

INSPECTION DATE & TIME

10/04/2021

ITR NUMBER

ITR-EL-0009

SYSTEM NO.:

DISPLINE

ELEC

SHEET NO

1 OF 1

Item/Tag NO.

For All Cables tages in PTJ-ELE-RFI-

Type :-

Core:

Size:

NO.	Description of check	RESUNT		
		ACCEPT	REJECT	N/A.
1	Check cable glands are correct type and size as per cable schedule.	✓		
2	Check there are no damages to cores, termination chamber layout is satisfactory, core identification is correct, crimped and pins satisfactory.	✓		
3	Check cable tag is done correctly.	✓		
4	Test and confirm conductor, phase continuity.	✓		
5	Check insulation resistance test (megger) is completed * ^I	✓		
6	Check Hi-pot test is completed, only for MV/HV cables * ^{II}			
7	Connect all cores at both ends and confirm all connections are correct as per termination diagram.	✓		✓
8	Confirm spare cores, screens are earthed and conform to design drawings/specifications			✓
9	Check enclosure cover is installed , no damages and no bolts are missing	✓		
10	Calibration test certificate of testing equipment to be checked.	✓		

Remarks :

^I : ITR-EL-006A/B^{II} : ITR-EL-008

	PETROJET	ENPPI	PMC
NAME :			
SIGNATURE			
DATE			

ITR-EL-0009

**Enppi**

EGPC CRUDE OIL TANK FARM



Owner : Egyptian General Petroleum Corporation (EGPC)

Project No: 01251-100-030
:01251-100-031

Contractor CONSORTIUM (ENPPI / PETROJET)

Document No: ITR-QC-0001
Revision No. : 00**REQUEST FOR INSPECTION**

ACTIVITY : cable termination and splicing

NOTIFICATION NO. : PTJ-ELEC-RFI-174 DISCIPLINE : E&I

DATE : 4/22/2021

NO.	DESCRIPTION	LOCATION	DATE / TIME	INSPECTION			REMARKS
				PETROJET	ENPPI	PMC	
	Mcs Installation	MODULE 1	28-Mar-21				
1	P-030-SUB-PFC-1A						
2	P-030-SUB-PFC-1B						
3	P-030-EPM1-TR-1						
4	P-030-EPM3-TR-1						
5	P-030-EPM4-TR-1						
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							

NOTE:

Inspection result : A - Approved B - Reject C - Approved with Comment

	PETROJET	ENPPI	PMC
NAME :			
SIGNATURE			
DATE			

ITR-QC-0001



EGPC CRUDE OIL TANK FARM



INSPECTION AND TEST REPORT FOR

CABLE TERMINATION AND SPLICING

SYSTEM NO.:

INSPECTION REPORT NUMBER

INSPECTION DATE & TIME

ITR NUMBER

ITR-EL-0009

DISCIPLINE

SHEET NO
1 OF 1

Item/Tag NO.

Type :-

Core:

Size:

NO.

Description of check

RESULT

1 Check cable glands are correct type and size as per cable schedule.

2 Check there are no damages to cores, termination chamber layout is satisfactory, core identification is correct, crimped and pins satisfactory.

3 Check cable tag is done correctly.

4 Test and confirm conductor, phase continuity.

5 Check insulation resistance test (megger) is completed *

6 Check Hi-pot test is completed, only for MV/HV cables **

7 Connect all cores at both ends and confirm all connections are correct as per termination diagram.

8 Confirm spare cores, screens are earthed and conform to design drawings/specifications

9 Check enclosure cover is installed, no damages and no bolts are missing

10 Calibration test certificate of testing equipment to be checked.

Remarks :

PETROJET

ENPPI



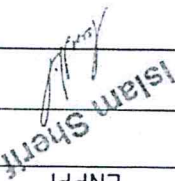
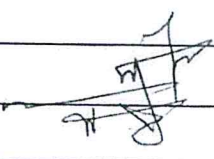
PMC

NAME :

SIGNATURE

DATE

ITR-EL-0009

				EGPC CRUDE OIL TANK FARM	
HI POT INSULATION TEST					
INSPECTION REPORT NUMBER: ITR-EL-0008 DISCIPLINE: SHEET NO 1 OF 1					
SYSTEM NO.:					
Item/Tag NO.		Type :-		Size:	
NO.		Description of check			
1	No damage of cable has found and maintain insulation resistance				
2	Correct cable type/size/ installed as per approved drawing				
3	Calibration test certificate of testing equipment to be checked.				
Continuity Test:		<input checked="" type="checkbox"/> ACCEPT <input type="checkbox"/> REJECT <input type="checkbox"/> N/A			
Test Equipment List					
INSTRUMENT TYPE:		SERIAL:		SERVICE VOLTAGE:	
TEST VOLTAGE:					
Insulation Resistance Test M ₂					
BR-BK		BR-GR		BR-ARM	
BR-BK		BR-GR		BR-ARM	
PHASE TO PHASE					
PHASES TO ARMOR					
Hi-Pot test					
Phase BR Test Voltage (i.v., kv)					
Phase	TEST VOLTAGE	TIME	CURRENT		
ARM,BK,GR, BR		15 Min	< 100 MA		
Phase BK Test Voltage (i.v., kv)					
Phase	TEST VOLTAGE	TIME	CURRENT		
ARM,BK,GR, BK		15 Min	< 100 MA		
Phase GR Test Voltage (i.v., kv)					
Phase	TEST VOLTAGE	TIME	CURRENT		
ARM,BK,GR, GR		15 Min	< 100 MA		
Insulation Resistance Test M ₂					
BR-BK		BR-GR		BR-ARM	
BR-BK		BR-GR		BR-ARM	
PHASE TO PHASE					
PHASES TO ARMOR					
Remarks :					
INSPECTION RESULTS: <input checked="" type="checkbox"/> APPROVE! <input type="checkbox"/> REJECT <input type="checkbox"/> APPROVED W/ COMMENT					
NAME		ENPPI		PMC	
SIGNATURE					
DATE					



Project: 01251-100
CRUDE OIL TANK FARM PROJECT (AGROOD AREA)



System ID	030-EL-017
System Description	Electrical Power Module-1 System

12.08- FAT Reports & Certificates




Project: 01251-100
CRUDE OIL TANK FARM PROJECT (AGROOD AREA)



System ID	030-EL-017
System Description	Electrical Power Module-1 System

12.09- SAT Reports & Certificates

030GL-017

	<p align="center"><u>EGPC – THE EGYPTIAN GENERAL PETROLEUM CORPORATION.</u></p>	
---	--	---

CRUDE OIL TANK FARM 1251-100

EPM MODULE 030-EPM1

SAT

Commissioning and Site Integration Test Procedures

1	16/11/2020	Approval	BP	LS	GA		
0	30/10/2020	Approval	BP	LS	GA		
Rev.	Date	Issued For	Prepared	Checked	Approved	Approved	Approved
<u>Notes:</u>			EGPC – THE EGYPTIAN GENERAL PETROLEUM CO.				
			Contract Number: 1251-100-500-16				
			Enppi Ref.: 01251-100-S07-P06-0001 R.1				
					Language: E		Total Pages: 19
This document is the property of Enppi It must not be stored, reproduced or disclosed to others without written authorization from the COMPANY							

INDEX

INTRODUCTION SAT PROCEDURE	3
Aim of the document.....	3
TESTING STRATEGY	3
Safety precaution	3
Personnel involved in the SAT	4
Section 1: EPM DESIGN & FABRICATION.....	4
DESCRIPTION OF THE TESTS	4
1.1 Documentation	5
1.2 Visual Check	7
Section 2: EPM ELECTRICAL INSTALLATION.....	8
DESCRIPTION OF THE TESTS	8
Personnel involved in the SAT	8
2.1 Documentation.	9
2.2 Internal and External Lighting system.....	10
Section 3: EPM LIGHTNING SYSTEM	13
DESCRIPTION OF THE TESTS	13
Personnel involved in the SAT	13
3.1 Documentation.	14
3.2 Lightning System	15
Section 4: EPM MCT Multicable Transition System	17
DESCRIPTION OF THE TESTS	17
Personnel involved in the SAT.....	17
4.1 Documentation.	18
4.2 MCT FRAME	19

INTRODUCTION SAT PROCEDURE

Aim of the document.

This document is the SAT Commissioning and Site Integration Test Procedure for the EPM Electrical Power Module

The document is the acceptance protocol concerning the characteristics of the supplied EPM

Definition:

Supplier: CEAR

Customer: ENPPI

Client: PPC

TESTING STRATEGY

The testing strategy includes the following two phases.

The Installation testing phase is developed to test the:

- Documentation;
- Mechanical installation;
- Electrical installation.
-

The Functioning testing phase is developed to test the functioning of the:

- Mechanical equipment's
- Electrical equipment's

Safety precaution

Before the beginning of the test brief safety induction will be done to all the people attending the test.

We will describe the company safety rules and the rules to be followed while attending the test.

	<p align="center"><u>EGPC – THE EGYPTIAN GENERAL PETROLEUM CORPORATION.</u></p>	
---	--	---

Personnel involved in the SAT

The table below shows the people who participate at the activity of the SAT (Commissioning and Site Integration Test): the present people must sign next to their name.

CEAR and ENPPI can use an external Inspector / Agency or third-party Body.

Name and Surname	Company/Position	Signature	Date
<i>Ahmed Eladain</i>	ENPPI	<i>A. Eladain</i>	16/7/2021
<i>M. Ibrahim</i>	PPC	<i>M. Ibrahim</i>	17/7/2021
<i>Com. Corium PABio</i>	CEAR	<i>Com. Corium</i>	17-7-21
	CEAR		

Section 1: EPM DESIGN & FABRICATION

DESCRIPTION OF THE TESTS

Visual test

Visual test will be performed to verify the good workmanship, the absence of sharpen edge, the absence of damages on the welds.

Dimensional Check

Dimensional Check will be performed to check if the dimensions of the component are in tolerances as per manufacturing drawings.

Surface Painting & Coating Check

Surface Painting check will be performed to check the painting coating and final internal/external color.

Identification and Marking Check

Identification and Marking Check will be performed to verify the correct nameplate of the EPM Module

1.1 Documentation

Following a list of the relevant documents used to perform the SAT (please fill the table with the last revision number of the documents used).

Document No.	Rev.	Description
01251-100-S07-B01-0001	R.7	EPM General Arrangements
01251-100-S07-B04-0001	R.5	EPM Foundation Drawings
01251-100-S07-B05-0001	R.2	EPM Doors drawing and fire rating
01251-100-S07-B05-0002	R.1	EPM False floor and fire rating
01251-100-S07-B05-0003	R.1	EPM Roof Accessibility
01251-100-S07-B05-0005	R.1	EPM Sandwich Walls Panel-Internal Partition
01251-100-S07-D01-0001	R.3	EPM Detail Design Fabrication Drawings
01251-100-S07-P05-0001	R.4	Surface Preparation Painting & Coating Procedures
01251-100-S07-D04-0001	R.2	EPM Nameplate format drawing
01251-100-S07-D99-0003	R.2	Transformer Dragging System Layout
01251-100-S07-D99-0001	R.2	EPM Lifting Pad Eyes Layout
01251-100-S07-D99-0002	R.2	EPM Centre of gravity Location Layout

Documentation check				
1.1	Aim	Check the presence of the project documentation.		
	Pre-requisites	N.A.		
	Test description	Check the presence and the state of the documentation listed on chapter 1.2		
	Acceptance criteria	All the documentation listed on chapter 1.1 Section 1 of the FAT procedure have to be present.		
	Notes			
	Executed	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Result	<input checked="" type="checkbox"/> Positive <input type="checkbox"/> Negative
	Date	Supplier	Customer	Client
	12-7-21			

1.2 Visual Check

1.2	Visual Check			
	Aim	Visual check of the good construction of the EPM		
	Pre-requisites	N.A.		
	Test description	Visual test will be performed to verify the good workmanship, the absence of sharpen edge, the absence of damages on the welds.		
	Acceptance criteria	Visual test and relevant photo		
	Notes			
	Executed	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Result	<input checked="" type="checkbox"/> Positive <input type="checkbox"/> Negative
	Date	Supplier	Customer	Client
17-7-21	<i>[Signature]</i>	<i>[Signature]</i>	<i>[Signature]</i>	

Section 2: EPM ELECTRICAL INSTALLATION

DESCRIPTION OF THE TESTS

Visual test

General visual test will be performed to verify the good workmanship

Internal and External Lighting System

Visual test and functional test will be performed as per the relevant documentation

Electrical Safety Check Lighting System

Safety check insulation and dielectric test

Internal raceway and EPM wiring

Visual inspection of the raceway and internal EPM wiring

Identification and Marking Check

Personnel involved in the SAT

The table below shows the people who participate at the activity of the SAT (Commissioning and Site Integration Test): the present people must sign next to their name.

CEAR and ENPPI can use an external Inspector / Agency or third-party Body.

Name and Surname	Company/Position	Signature	Date
<i>Ahmed Abdelhakem</i>	ENPPI	<i>A. Abdelhakem</i>	17/7/2021
<i>M. Ibrahim</i>	PPC	<i>M. Ibrahim</i>	17/7/2021
<i>Com. Corrado Pizzuto</i>	CEAR	<i>Com. Corrado Pizzuto</i>	17-07-21
	CEAR		

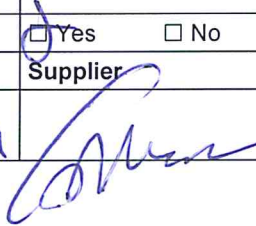
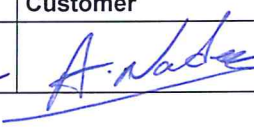

2.1 Documentation.

Following a list of the relevant documents used to perform the SAT (please fill the table with the last revision number of the documents used).

Document No.	Rev.	Description
01251-100-S07-E99-0008	R.3	Lighting and Small Power System Electrical Layout
01251-100-S07-E99-0011	R.4	Cable Routing Power & Lighting Layout
01251-100-S07-C99-0001	R.3	Lighting Lux Level Calculation
01251-100-S07-K09-0004	R.4	EPM Ancillaries Supplier Data Sheet

2.1	Documentation check			
	Aim	Check the presence of the project documentation.		
	Pre-requisites	N.A.		
	Test description	Check the presence and the state of the documentation listed on chapter 2.1.		
	Acceptance criteria	All the documentation listed on chapter 2.1 Section 2 of the SAT procedure have to be present.		
	Notes			
	Executed	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Result	<input checked="" type="checkbox"/> Positive <input type="checkbox"/> Negative
	Date	Supplier	Customer	Client
	17-7-21 / <i>[Signature]</i>	<i>[Signature]</i>	<i>[Signature]</i>	

2.2 Internal and External Lighting system

2.2.1	Internal and External Lighting Fixtures and Small Power system layout			
	Aim	Verify the installation of the fixtures and the small power system of the EPM Module.		
	Pre-requisites	N.A.		
	Test description	The installation and the material must be in compliance with the values reported on the following documents: 01251-100-S07-E99-0008 Lighting and Small Power System Layout 01251-100-S07-D99-0011 Cable routing Power & Lighting Layout 01251-100-S07-K09-0004 Ancillaries supplier data sheet		
	Acceptance Criteria	Visual check and quantity check of the equipment		
	Notes			
	Executed	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Result	<input checked="" type="checkbox"/> Positive <input type="checkbox"/> Negative
Date	Supplier	Customer	Client	
17-01-21				

2.2.2	<p align="center">Internal and External Lighting Fixtures Functional Test</p>			
	Aim	Verify the proper operation of the internal and external EPM lighting system.		
	Pre-requisites	Energize the indoor and outdoor distribution boards with 400 V 3P+N		
	Test description	<p>The test must be in compliance with the following documents:</p> <p>01251-100-S07-E99-0008 Lighting and Small Power System Layout</p> <p>01251-100-S07-K09-0004 Ancillaries supplier data sheet</p> <p>01251-100-S07-E10-0002 Indoor Panel Single Line diagram</p> <p>01251-100-S07-E10-0003 Outdoor Panel Single Line Diagram</p> <p>01251-100-S07-D99-0011 EPM Cable routing & Lighting Layout</p> <p>01251-100-S07-C99-0001 Lighting Lux level Calculation</p>		
	Acceptance Criteria	<p>Single Test of the various lighting circuit as defined in the electrical documentation.</p> <p>Check the correct function of the emergency light fixtures external and internal</p> <p>Check the correct function of the twilight switch and the emergency line circuit</p>		
	Notes			
	Executed	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Result	<input checked="" type="checkbox"/> Positive <input type="checkbox"/> Negative
Date	Supplier	Customer	Client	
17-07-20	<i>[Signature]</i>	<i>[Signature]</i>	<i>[Signature]</i>	

2.2.3	Small Power system Functional test			
	Aim	Verify the proper operation of the internal and external EPM receptacles		
	Pre-requisites	Supply the indoor and outdoor distribution with 400 V 3P+N		
	Test description	The test must be in compliance with the following documents: 01251-100-S07-E99-0008 Lighting and Small Power System Layout 01251-100-S07-K09-0004 Ancillaries supplier data sheet 01251-100-S07-E10-0002 Indoor Panel Single Line diagram 01251-100-S07-E10-0003 Outdoor Panel Single Line Diagram 01251-100-S07-D99-0011 EPM Cable routing & Lighting Layout		
	Acceptance Criteria	Single Test of the small power system circuit as defined in the electrical documentation. Check the correct function of the small power system external and internal		
	Notes			
	Executed	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Result	<input checked="" type="checkbox"/> Positive <input type="checkbox"/> Negative
	Date	Supplier	Customer	Client
17-07-2016	<i>[Signature]</i>	<i>[Signature]</i>	<i>[Signature]</i>	

	<p align="center"><u>EGPC – THE EGYPTIAN GENERAL PETROLEUM CORPORATION.</u></p>	
---	--	---

Section 3: EPM LIGHTNING SYSTEM

DESCRIPTION OF THE TESTS

Visual test

General visual test will be performed to verify the good workmanship

Lightning System

Visual test and continuity check of the earthing system will be performed as per the relevant documentation

Personnel involved in the SAT

The table below shows the people who participate at the activity of the SAT (Commissioning and Site Integration Test) the present people must sign next to their name.

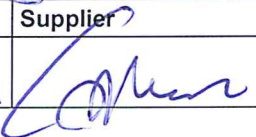
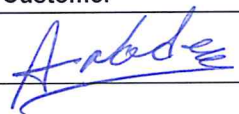
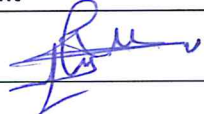
CEAR and ENPPI can use an external Inspector / Agency or third-party Body.

Name and Surname	Company/Position	Signature	Date
Ahmed Nadeem	ENPPI		17/7/2021
M. Dardine	PPC		17/7/2021
CORTI CORTI P. B. 10	CEAR		17-07-21
	CEAR		

3.1 Documentation.

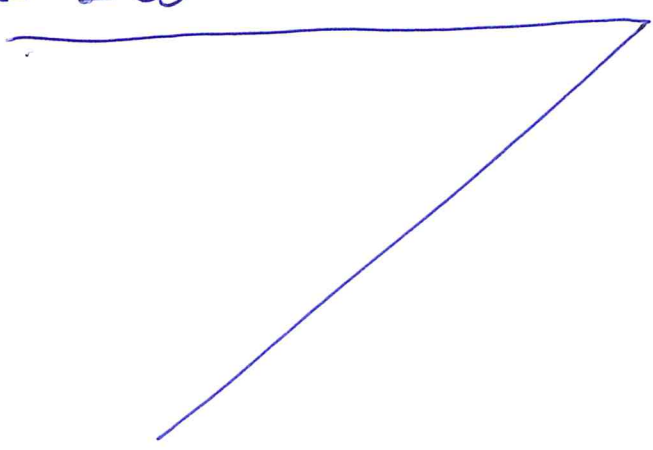
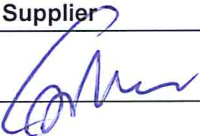
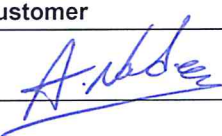
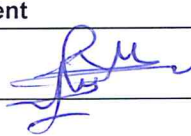
Following a list of the relevant documents used to perform the SAT (please fill the table with the last revision number of the documents used).

Document No.	Rev.	Description
01251-100-S07-B01-0001	R.7	General Arrangement
01251-100-S07-E99-0010	R.4	Lightning System General Layout
01251-100-S07-C99-0008	R.3	Lightning Protection Calculation

3.1.1	Documentation check			
	Aim	Check the presence of the project documentation.		
	Pre-requisites	N.A.		
	Test description	Check the presence and the state of the documentation listed on chapter 3.1		
	Acceptance criteria	All the documentation listed on chapter 3.1 Section 3 of the SAT procedure have to be present.		
	Notes			
	Executed	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Result	<input checked="" type="checkbox"/> Positive <input type="checkbox"/> Negative
	Date	Supplier	Customer	Client
17-07-21				

3.2 Lightning System

3.2.1	Lightning system layout installation			
	Aim	Verify the installation of the EPM lightning system		
	Pre-requisites	N.A.		
	Test description	The installation and the material must be in compliance with the following document: 01251-100-S07-E99-0010 Lightning System Layout		
	Acceptance Criteria	Visual check and quantity check of the equipment		
	Notes			
	Executed	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Result	<input checked="" type="checkbox"/> Positive <input type="checkbox"/> Negative
	Date	Supplier	Customer	Client
17-07-21	[Signature]	[Signature]	[Signature]	

3.2.2	Lightning system continuity check			
	Aim	Verify the continuity of the EPM lightning system		
	Pre-requisites	N.A.		
	Test description	The installation and the material must be in compliance with the following document: 01251-100-S07-E99-0010 Lightning System Layout		
	Acceptance Criteria	The resistance measured shall be at least $< \Omega$.		
	Instrument	Type: <u>REGGELER</u> Mod. <u>MIT 620-2</u> S/N : <u>11</u> Test Certificate : <u>4</u>		
	Notes	<p><u>R = $< 1 \Omega$</u></p> 		
	Executed	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Result	<input checked="" type="checkbox"/> Positive <input type="checkbox"/> Negative
Date	Supplier	Customer	Client	
17-7-21				

	<p align="center"><u>EGPC – THE EGYPTIAN GENERAL PETROLEUM CORPORATION.</u></p>	
---	--	---

Section 4: EPM MCT Multicable Transition System

DESCRIPTION OF THE TESTS

Visual test

General visual test will be performed to verify the good workmanship

Identification and Marking Check

Personnel involved in the SAT.

The table below shows the people who participate at the activity of the SAT ((Commissioning and Site Integration Test) the present people must sign next to their name.

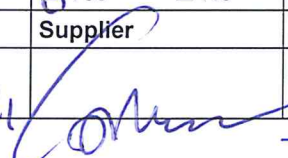
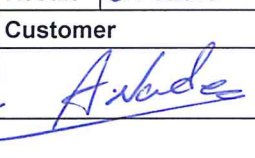
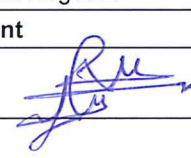
CEAR and ENPPI can use an external Inspector / Agency or third-party Body.

Name and Surname	Company/Position	Signature	Date
Ahmed Mohamed	ENPPI		17/7/2021
M. Ibrahim	PPC		17/7/2021
Contr. Contr. w. FA B10	CEAR		17-07-21
	CEAR		


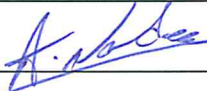
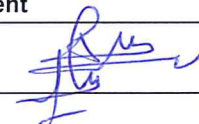
4.1 Documentation.

Following a list of the relevant documents used to perform the sAT (please fill the table with the last revision number of the documents used).

Document No.	Rev.	Description
01251-100-S07-B01-0001	R.7	General Arrangement
01251-100-S07-E99-0005	R.4	MCT Frame Layout and schedule

4.1.1	Documentation check			
	Aim	Check the presence of the project documentation.		
	Pre-requisites	N.A.		
	Test description	Check the presence and the state of the documentation listed on chapter 4.1.		
	Acceptance criteria	All the documentation listed on chapter 4.1 Section 4 of the SAT procedure have to be present.		
	Notes			
	Executed	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Result	<input checked="" type="checkbox"/> Positive <input type="checkbox"/> Negative
	Date	Supplier	Customer	Client
	17-07-21			

4.2 MCT FRAME

4.2	MCT Frame layout installation				
	Aim	Verify that the installation of the MCT layout			
	Pre-requisites	N.A.			
	Test description	The installation and the material must be in compliance with the following document: 01251-100-S07-E99-0005 MCT Frame Layout Arrangement			
	Acceptance Criteria	Visual check and quantity check of the equipment			
	Notes	<p align="center">MCT SHALL BE INSTALLED OPTION CABLE COARRING (Laying) COMPLETION</p>			
	Executed	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		Result	<input type="checkbox"/> Positive <input type="checkbox"/> Negative
	Date	Supplier	Customer	Client	
17-07-21					

	<p align="center"><u>EGPC – THE EGYPTIAN GENERAL PETROLEUM CORPORATION.</u></p>	
---	--	---

CRUDE OIL TANK FARM 1251-100

EPM MODULE 030-EPM1

LVSWG MCC

SAT

Commissioning and Site Integration Test Procedures

1	16/11/2020	Approval	BP	LS	GA		
0	20/10/2020	Approval	BP	LS	GA		
Rev.	Date	Issued For	Prepared	Checked	Approved	Approved	Approved
<u>Notes:</u>			EGPC – THE EGYPTIAN GENERAL PETROLEUM CO.				
			Contract Number: 1251-100-16-7				
			Enppi Ref.: 01251-100-S07-P06-0002 R.1				
					Language: E		Total Pages:30
This document is the property of Enppi It must not be stored, reproduced or disclosed to others without written authorization from the COMPANY							

INDEX

INTRODUCTION SAT PROCEDURE	3
Aim of the document.	3
TESTING STRATEGY.....	3
Safety precaution.....	3
Personnel involved in the SAT.....	4
DESCRIPTION OF THE TESTS.....	4
1.1. Testing Equipment to be used.....	5
1.2. Documentation.....	6
1.2.1. Documentation check	7
2. GENERAL CONSTRUCTION CHECK	8
3. EQUIPMENT CHECK	11
4. ELECTRICAL SAFETY CHECK.....	12
5. POWER SUPPLY CHECK.....	15
6. FUNCTIONAL TESTING.....	18
6.1. Electrical equipment.....	18
7. COMMISSIONING and START-UP PROCEDURES	23
7.1. Preliminary operations.....	23
7.1.1 Mechanical assembling check list.	23
7.1.2 Electrical connection check list.	23
7.1.3 Checks without power supply.....	23
7.2. COMMISSIONING.....	24
7.3. INCOMING LINE SWITCH FUNCTION (column 1).....	25
7.3.1. NORMAL OPERATION.....	25
7.3.2. POWER SUPPLY LOSS.....	26
7.3.3. POWER RESTORATION.....	26
7.4. LVSWG MCC Columns	27
7.4.1. Drawer feeder commissioning/operating (column 2)	27
7.4.2. DOL drawer commissioning/operating (column 3 and 4)	28

	<p align="center"><u>EGPC – THE EGYPTIAN GENERAL PETROLEUM CORPORATION.</u></p>	
---	--	---

INTRODUCTION SAT PROCEDURE

Aim of the document.

This document is the SAT Commissioning and Site Integration Test Procedure for the EPM Electrical Power Module

The document is the acceptance protocol concerning the characteristics of the supplied EPM

Definition:

Supplier: CEAR

Customer: ENPPI

Client: PPC

TESTING STRATEGY

The testing strategy includes the following two phases.

The Installation testing phase is developed to test the:

- Documentation;
- Mechanical installation;
- Electrical installation.

The Functioning testing phase is developed to test the functioning of the:

- Mechanical equipment's
- Electrical equipment's

Safety precaution

Before the beginning of the test brief safety induction will be done to all the people attending the test.

We will describe the company safety rules and the rules to be followed while attending the test.

	<p align="center"><u>EGPC – THE EGYPTIAN GENERAL PETROLEUM CORPORATION.</u></p>	
---	--	---

Personnel involved in the SAT.

The table below shows the people who participate at the activity of the SAT (Commissioning and Site Integration Test Procedures): the present people must sign next to their name.

CEAR can use an external Inspector / Agency or third-party Body.

Name and Surname	Company/Position	Signature	Date
Ahmed Abdelm	ENPPI		17/7/2021
M. Ibrahim	PPC		17/7/2021
COTI, COTIN FA B10	CEAR		17-07-21
	CEAR		

DESCRIPTION OF THE TESTS

Visual test

General visual test will be performed to verify the good workmanship and correct installations

This document is the Site Acceptance Test for the Motor Control Center.

The document is the acceptance protocol concerning the hardware characteristics of the supplied MCC.



**EGPC – THE EGYPTIAN GENERAL
PETROLEUM CORPORATION.**



1.1. Testing Equipment to be used

Following a list of the instruments shall be available during the SAT by ENPPI:

Instrument	Model	Serial Number	Calibration expiry date
Electrical safety Tester for insulation and Dielectric tests	METREL MI 2270	51005	06-10-23
High voltage insulation Tester up to 1 kV DC (megger)	Megger MIT 420-2	/	/
Torque wrench	US 6	A30301901625	06-08-22
Multimeter	HITA HT 1100	98600509	01-02-24
Ammeter Clamp	HITA HT 8020	19073006	08-02-24

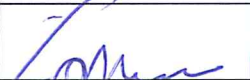
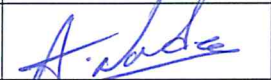

1.2. Documentation.

Following a list of the relevant documents used to perform the SAT (please fill the table with the last revision number of the documents used).

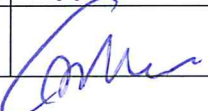
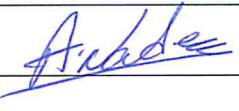
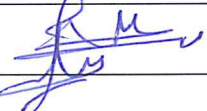
Document No.	Rev.	Description
01251-100-S07-B01-0001	R.7	General Arrangement
01251-100-S07-E02-0001	R.4	LVSWG Overall Dimensions Panel Layout
01251-100-S07-E10-0001	R.5	LVSWG Single line diagram.
01251-100-S07-E99-0006	R.4	LV Bus Duct General Arrangement
01251-100-S07-K09-0003	R.4	EPM Main Equipment Supplier Data Sheet
01251-100-S07-E05-0002	R.5	EPM Internal Cable schedule

	<p align="center">EGPC – THE EGYPTIAN GENERAL PETROLEUM CORPORATION.</p>	
---	---	---

1.2.1. Documentation check

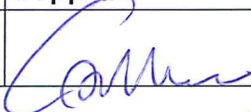
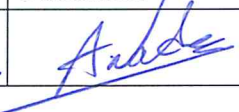

1.2.1	Documentation check			
	Aim	Check the presence of the project documentation.		
	Pre-requisites	N.A.		
	Test description	Check the presence and the state of the documentation listed on chapter 4.1 of the SAT procedure.		
	Acceptance criteria	All the documentation listed on chapter 1.1 of the SAT procedure have to be present.		
	Notes			
	Executed	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Result	<input checked="" type="checkbox"/> Positive <input type="checkbox"/> Negative
	Date	Supplier	Customer	Client
17-07-21				

2. GENERAL CONSTRUCTION CHECK

2.1.1	Terminal block connections.			
	Aim	Check the terminal block connections (wiring and tightening).		
	Pre-requisites	N.A.		
	Test description	Spot visual inspection and tightening test (with a screw driver).		
	Acceptance criteria	The terminal block connections must be in compliance with the following documents: 01251-100-S07-E10-0001 LVSWG Single Line Diagram		
	Instrument	Screw driver.		
	Notes			
	Executed	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Result	<input checked="" type="checkbox"/> Positive <input type="checkbox"/> Negative
	Date	Supplier	Customer	Client
17-07-21				

LVSWG Cleanliness of the equipment			
Aim	Check the cleanliness of the equipment.		
Pre-requisites	Switchgear ready to be energized.		
Test description	Visual inspection.		
Acceptance criteria	The LV PMCC Switchgear is clean, dust has been removed and no tools are present in it.		
Instrument	N.A.		
2.1.2	<p>Notes</p> <p><i>* Further Cleaning inside the MCC is required</i></p>		
Executed	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Result	<input type="checkbox"/> Positive <input type="checkbox"/> Negative
Date	Supplier	Customer	Client
17/07/21	<i>[Signature]</i>	<i>[Signature]</i>	<i>[Signature]</i>

	<p align="center">EGPC – THE EGYPTIAN GENERAL PETROLEUM CORPORATION.</p>	
---	---	---

2.1.3	Mechanical and electrical interlocks			
	Aim	Check the functioning of the mechanical and electrical interlocks, door handle interlocks, key interlocks)		
	Pre-requisites	N.A.		
	Test description	Functional test of all the mechanical and electrical interlocks.		
	Acceptance criteria	All the mechanical and electrical interlocks described on the following documents must be operative: The LVSWG arrangement must be in compliance with the following documents: 01251-100-S07-E02-0001 LVSWG Overall Dimension Panel Layout. 01251-100-S07-E10-0001 LVSWG Single line Diagram		
	Instrument	Operating handles, keys.		
	Notes			
	Executed	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Result	<input checked="" type="checkbox"/> Positive <input type="checkbox"/> Negative
Date	Supplier	Customer	Client	
	17-07-21			


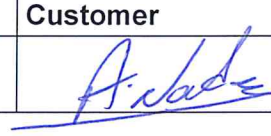
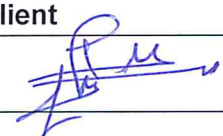
3. EQUIPMENT CHECK

3.1	Visual check of power and auxiliary equipment like circuit breakers, switches, relays, contactors, lamps (model / rating).			
	Aim	Check the correct selection, installation and wiring of the circuit breakers and switches.		
	Pre-requisites	N.A.		
	Test description	Visual inspection of electrical components.		
	Acceptance criteria	The LVSWG circuit breakers and switches must be in compliance with the following document: 01251-100-S07-E10-0001 LVSWG Single line Diagram		
	Instrument	N.A.		
	Notes	<i>* the 230 Vac / 110 VDC power Supply is missing the 12V module that shall be provided by Cear</i>		
	Executed	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Result	<input checked="" type="checkbox"/> Positive <input type="checkbox"/> Negative
	Date	Supplier	Customer	Client
17-07-21	<i>[Signature]</i>	<i>[Signature]</i>	<i>[Signature]</i>	

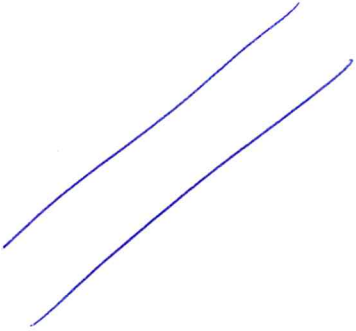

4. ELECTRICAL SAFETY CHECK

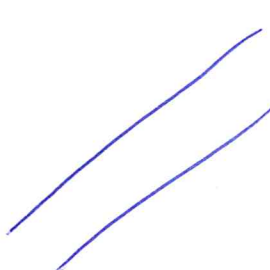
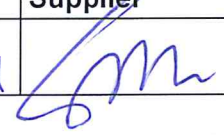
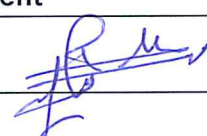
4.1.1	Insulation resistance test main circuits				
	Aim	A measurement of the resistance of the main circuit shall be made in accordance to IEC 61439-1 Standard.			
	Pre-requisites	N.A.			
	Test description	The measurement shall be made with DC voltage MegaOhmeter by measuring the resistance across the terminals of each phase.			
	Acceptance criteria	Resistance value bigger than 10 Mohm. The measured value of the resistance shall be listed in the test report, as well as the general conditions during the test (current, air temperature, etc.) for future comparison.			
	Instrument	Type: <u>MEGGHON</u> Mod.: <u>MIT40-2</u> S/N: <u>✓</u> Test Certificate: <u>✓</u>			
	Test results	<u>L1-G = 213 GΩ</u> <u>L2-G = 2179 GΩ</u> <u>L3-G = 2120 GΩ</u> <u>N-G = 59 GΩ</u>			
	Notes				
	Executed	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Result	<input checked="" type="checkbox"/> Positive <input type="checkbox"/> Negative	
	Date	Supplier	Customer	Client	
<u>17-07-21</u>	<u>[Signature]</u>	<u>[Signature]</u>	<u>[Signature]</u>		

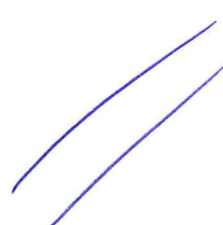
4.1.2	Dielectric test for main circuits.			
	Aim	Perform a dielectric test of the main circuits in accordance to IEC 61439-1 Standard.		
	Pre-requisites	N.A.		
	Test description	<p>Withstand voltage should be 2,5 kV ac for 5 seconds. The power-frequency voltage test shall be performed according to the IEC requirements.</p> <p>The test voltage shall be applied connecting each phase conductor of the main circuit in turn to the high-voltage terminal of the test supply,</p> <p>Dielectric tests shall be done on 10% of the number of similar units with a minimum of 2 units.</p>		
	Acceptance criteria	Please refer to chapter 10.9.2.4 of the CEI EN 61439-1 Standard.		
	Instrument	<p>Type: <u>METROL</u></p> <p>Mod.: <u>MF 2170</u> S/N: <u>SA005</u></p> <p>Test Certificate: <u>3004-1</u></p>		
	Test results	<p><u>L1 - G = 1,5 MA</u></p> <p><u>L2 - G = 1,5 MA</u></p> <p><u>L3 - G = 1,2 MA</u></p> <p><u>N - G = 1,5 MA</u></p>		
	Notes			
	Executed	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Result	<input checked="" type="checkbox"/> Positive <input type="checkbox"/> Negative
	Date	Supplier	Customer	Client
<u>17/07/11</u>	<u>[Signature]</u>	<u>[Signature]</u>	<u>[Signature]</u>	

4.1.3	Dielectric test for auxiliary circuits.			
	Aim	Perform a dielectric test of the auxiliary circuits in accordance with CEI EN 61439-1 standard.		
	Pre-requisites	N.A.		
	Test description	Withstand voltage should be 1500 V ac for 5 seconds. Dielectric tests shall be done on 10% of the number of similar units with a minimum of 2 units.		
	Acceptance criteria	Please refer to chapter 10.9.2.4 of the CEI EN 61439-1 Standard.		
	Instrument	Type: <u>MOTNOL</u> Mod.: <u>H.F.2770</u> S/N: <u>SM005</u> Test Certificate: <u>3004-1</u>		
	Test results	<p>FEEDER Aux SUPPLY = $C = 0,2\text{MA}$ $W = 0,2\text{MA}$</p> <p>DC Aux SUPPLY = $C = 0,13\text{MA}$ $W = 0,13\text{MA}$</p> <p>REF 615 Aux SUPPLY = $C = 0,2\text{MA}$ $W = 0,2\text{MA}$</p> <p>Aux SUPPLY 230V = $C = 25\text{MA}$ $W = 22\text{MA}$</p> <p>Aux SUPPLY 110V DC = $C = 0,2\text{MA}$ $W = 0,2\text{MA}$</p>		
	Notes			
	Executed	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Result	<input checked="" type="checkbox"/> Positive <input type="checkbox"/> Negative
Date	Supplier	Customer	Client	
17/07/21				

5. POWER SUPPLY CHECK

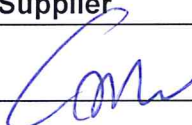
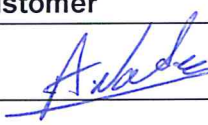
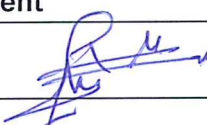
Main circuits Power supply				
Aim	Check the main circuits power supply.			
Pre-requisites	N.A.			
Test description	Check the presence and the value of the main power supply voltage.			
Acceptance criteria	The main circuits power supply voltage should be 400V 3P+N 50Hz.			
Instrument	Type: ... <u>HT 1750</u> Mod.: <u>HT 820.0</u> S/N : <u>85602529</u> Test Certificate: ... <u>7564</u>			
Measured voltage	Value	<u>400V</u>	Frequen cy	<u>50Hz</u>
5.1.1	<div style="text-align: center;">  </div>			
Notes				
Executed	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Result	<input checked="" type="checkbox"/> Positive <input type="checkbox"/> Negative	
Date	Supplier	Customer	Client	
<u>17-07-21</u>		<u>Arada</u>		

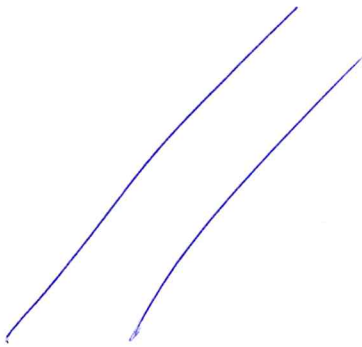
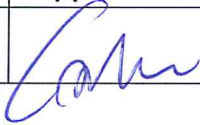
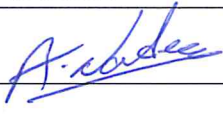
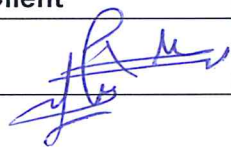
Auxiliary circuits Power supply					
5.1.2	Aim	Check the auxiliary circuits power supply.			
	Pre-requisites	N.A.			
	Test description	Check the presence and the value of the auxiliary power supply voltage.			
	Acceptance criteria	The auxiliary circuits power supply voltage should be 230V 1P+N 50Hz.			
	Instrument	Type: <u>F.T. 11304</u> Mod. <u>F.T. 11300</u> S/N: <u>98600599</u> Test Certificate: <u>7544</u>			
	Measured voltage	Value	<u>230V</u>	Frequen cy	<u>50Hz</u>
	Notes				
Executed	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Result	<input checked="" type="checkbox"/> Positive <input type="checkbox"/> Negative		
Date	Supplier	Customer	Client		
<u>17-07-21</u>		<u>A. Abdel</u>			

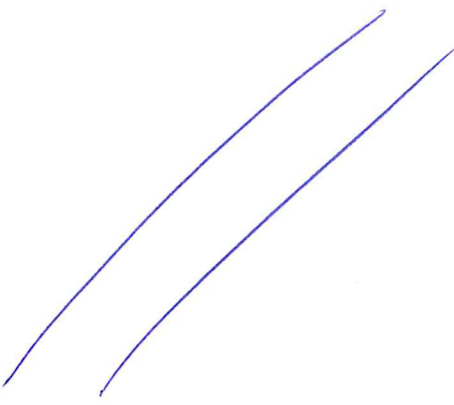
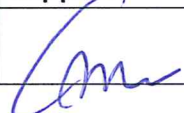
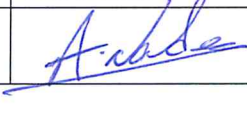

Heaters and Internal light				
Aim	Check the heaters power supply.			
Pre-requisites	Low voltage auxiliary power supply 230 Vac control circuits interconnected.			
Test description	N.A.			
Acceptance criteria	The heaters power supply voltage should be 230V 1P+N 50Hz.			
Instrument	Type: ... <u>HT. ITA 17</u> ... Mod.: <u>HT. 100</u> ... S/N : <u>93.600.598</u> Test Certificate: ... <u>7344</u> ...			
Measured voltage	Value	<u>230V</u>	Frequen cy	<u>50Hz</u>
Notes	<div style="text-align: center;">  </div>			
Executed	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Result	<input checked="" type="checkbox"/> Positive <input type="checkbox"/> Negative	
Date	Supplier	Customer	Client	
<u>17-07-21</u>	<u>[Signature]</u>	<u>[Signature]</u>	<u>[Signature]</u>	

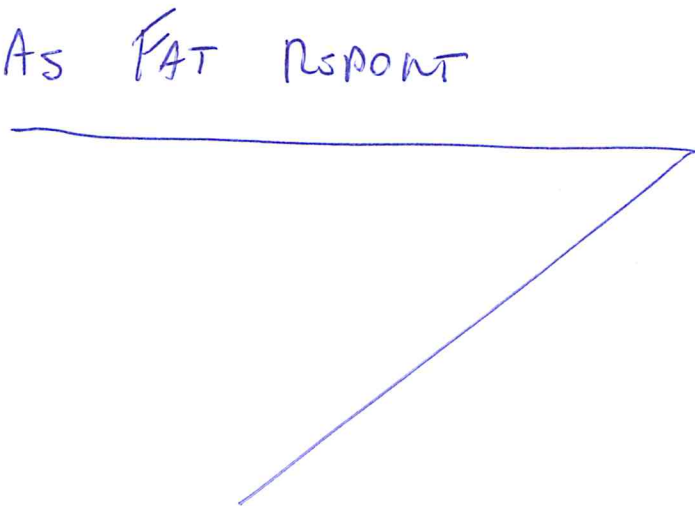
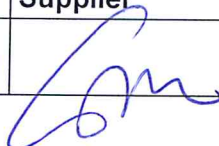
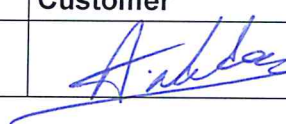
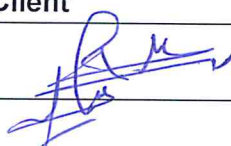
6. FUNCTIONAL TESTING.

6.1. Electrical equipment.

6.1.1	LVSWG power sections operating conditions.				
	Aim	Operation tests shall be made to ensure that the switching devices and removable parts and mechanical interlocks work properly.			
	Pre-requisites	N.A.			
	Test description	These tests shall be performed without voltage on or current in the main circuits.			
	Acceptance criteria	It shall be verified that: – the switching devices open and close correctly – each removable part can be inserted and removed correctly; – all interlocks work properly.			
	Instrument				
	Notes				
	Executed	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Result	<input checked="" type="checkbox"/> Positive <input type="checkbox"/> Negative	
	Date	Supplier	Customer	Client	
17-07-21					

6.1.2	LVSWG withdrawable units operating conditions.			
	Aim	Check the functioning of the LVSWG withdrawable motor starters		
	Pre-requisites	N.A.		
	Test description	Check the mechanical and electrical functioning of the withdrawable units: <ul style="list-style-type: none"> • TEST mode; • REMOTE mode; 		
	Acceptance criteria	The mechanical and electrical functioning of the withdrawable units must be in compliance with the following document: 01251-100-S07-E10-0001 LVSWG Single line Diagram		
	Checked units			
	Notes			
	Executed	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Result	<input checked="" type="checkbox"/> Positive <input type="checkbox"/> Negative
Date	Supplier	Customer	Client	
17-07-2020				

6.1.3	LVSWG withdrawable units operating conditions.			
	Aim	Check the functioning of the LVSWG withdrawable feeders		
	Pre-requisites	N.A.		
	Test description	Check the mechanical and electrical functioning of the withdrawable units:		
	Acceptance criteria	The mechanical and electrical functioning of the withdrawable units must be in compliance with the following document: 01251-100-S07-E10-0001 LVSWG Single line Diagram		
	Checked units			
	Notes			
	Executed	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Result	<input checked="" type="checkbox"/> Positive <input type="checkbox"/> Negative
	Date	Supplier	Customer	Client
17-07-20				

6.1.4	Protection relays functional test.			
	Aim	Check and test the protective relays by current injection on primary and secondary circuits.		
	Pre-requisites	N.A.		
	Test description	Inject the test current into the primary and secondary circuits of the Current Transformers and check the intervention of the relevant protection relays. Protection relays to be checked are the ones of the: <ul style="list-style-type: none"> • LVSWG Incoming sections; • LVSWG withdrawable units. 		
	Acceptance criteria	The protection relays intervention must be in compliance with the following document: 01251-100-S07-E10-0001 LVSWG Single line Diagram		
	Protection functions Tested	AS FAT REPORT 		
	Notes			
	Executed	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Result	<input checked="" type="checkbox"/> Positive <input type="checkbox"/> Negative
Date	Supplier	Customer	Client	
17-07-11				



**EGPC – THE EGYPTIAN GENERAL
PETROLEUM CORPORATION.**



6.1.5	Inter-changeability of electrically identical components.			
	Aim	Check the inter-changeability of electrically identical components.		
	Pre-requisites	N.A.		
	Test description	Change the position/assembling of electrically identical components.		
	Acceptance criteria	The system LVSWG must continue to work properly.		
	Notes			
	Executed	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Result	<input checked="" type="checkbox"/> Positive <input type="checkbox"/> Negative
Date	Supplier	Customer	Client	
17-07-21	<i>[Signature]</i>	<i>[Signature]</i>	<i>[Signature]</i>	

7. COMMISSIONING and START-UP PROCEDURES

7.1. Preliminary operations.

Before starting-up the electrical and instrumentation commissioning of the M.C.C. all the erection activity have to be completed and all the followings point should be checked and confirmed.

7.1.1 Mechanical assembling check list.

	Check equipment' alignment	<input checked="" type="checkbox"/>
	Check all bolts fixing	<input checked="" type="checkbox"/>

7.1.2 Electrical connection check list.

	Check cabling connection	<input checked="" type="checkbox"/>
	Check the insulation resistance of the outgoing cabling before energising the loads	<input checked="" type="checkbox"/>

7.1.3 Checks without power supply.

Before energising the system, all the followings point should be checked and confirmed.

	Check the grounding connection of the MCC	<input checked="" type="checkbox"/>
	Check and set all the electrical protection as per the wiring diagram	<input checked="" type="checkbox"/>

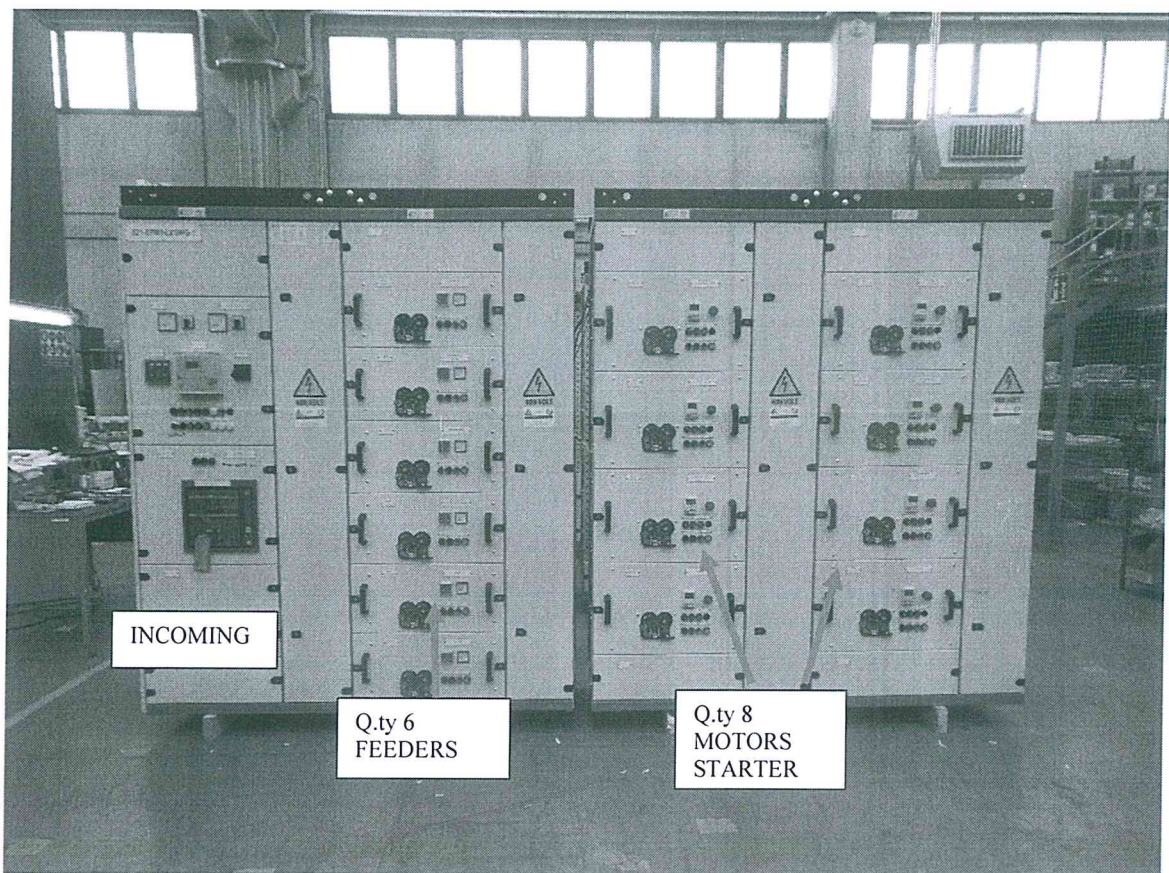
7.2.COMMISSIONING

Before starting the MCC energising sequence, all the Incoming Line Circuit breaker, the drawers main circuit breakers and the miniature circuit breakers must be previously opened.

MCC Power section commissioning/operating.

The MCC is supplied by one incoming line from transformer Tag 0XY-EPM(Z)-TR-1 400V 3ph +P + N (see fig. 1.1).

Fig. 1.1 – MCC Incoming Lines



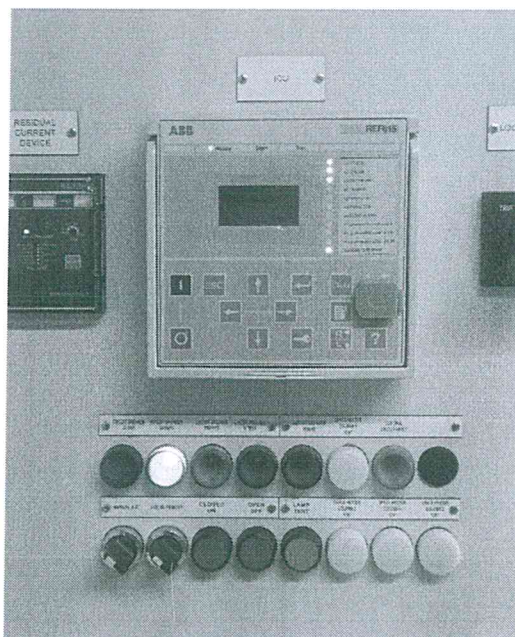
To start with the commissioning operation the LVSWG MMC shall be fed from the transformer 400 V 50 Hz 3P +N for power circuits and fed from the UPD panel for the auxiliary circuits 230V 50 Hz 1P+N.

7.3.INCOMING LINE SWITCH FUNCTION (column 1)

7.3.1. NORMAL OPERATION

MAIN INCOMING SWITCH ON- OFF COMMAND

The main switch can be commanded in the following mode by the selector switch and operators installed on the auxiliary command panel of the incoming column of the MCC. (see picture below)



Selector switch 30SA1 “Manual-Automatic” function

- Manual position defines the switch command by Local command from the MCC
- Automatic position defines the switch command by the control relay REF 615.

Selector switch 30SA2 “Local-Remote” function

- Local position defines the command switch by the start/stop pushbutton installed on the command panel
- Remote position defines the command switch by the command from DCS Enppi

Local Operation sequences:

- Turn the selector switch 30SA1 in Manual position
- Turn the selector switch 30SA2 in Local position
- Press the pushbutton 30SB1 for “Close” command
- Press the pushbutton 30SB2 for “Open” command

Remote Operation sequences:

- Turn the selector switch 30SA1 in Automatic position
- Turn the selector switch 30SA2 in Remote position
- The command "Closed" from DCS command the closing of switch
- The command "Open" from DCS command the opening switch

Automatic Operation sequences:

- Turn the selector switch 30SA1 in Automatic position
- The "Close" command is generated from the relay REF 615
- The "Open" command is generated from the relay REF 615

7.3.2. POWER SUPPLY LOSS

The main incoming switch shall open due to under voltage protection (F27) controlled by protection relay REF615 (27A1)

The main switch of the feeder drawer shall remain closed

The main switch of the DOL drawer shall remain closed, motor contactor contactors shall open if under voltage continue more than 4.5 seconds.

7.3.3. POWER RESTORATION

The main incoming switch shall be closed in one of the way indicated in the point 1 Local, Remote or Automatic

If the motor contactor open, due to power loss for more than 4.5 seconds,) can be restarted manually from the local control station (Local Start/Stop) or from the DCS command (Start/Stop contact).

See point 8.3 DOL drawer

7.4.LVSWG MCC Columns

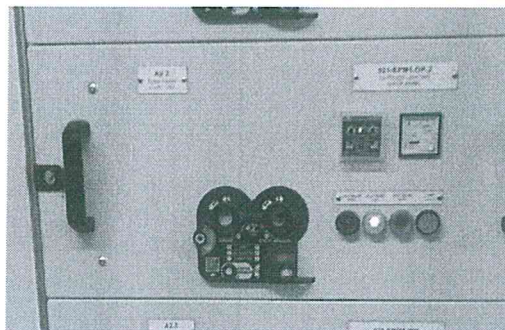
7.4.1. Drawer feeder commissioning/operating (column 2)

The drawer feeder column 2 is equipped with:

- Q.ty 5 Type F 4 poles drawers for feeder 100A
- Q.ty 1 Type F 3 poles drawers for feeder 63A

Front Drawer feeder type F (3 & 4 poles) see below picture

- PA80A Ammeter;
- 84SB1, Lamp Test blue push-button
- 84HL1, Green signal lamps (Circuit breaker open)
- 84HL2, Red signal lamps (Circuit breaker closed)
- 84HL3, Yellow signal lamps (Circuit breaker tripped on fault)
- 82A1, Residual current monitor






The feeders are connected according to the doc. 01251-100-S07-E10-0001

Test sequence

Check that the MCC is energized	<input checked="" type="checkbox"/>
Insert the drawer	<input checked="" type="checkbox"/>
✓ Check the correct function of the signal lamps by pushing the:	<input checked="" type="checkbox"/>
✓ 84SB1 Lamp test push button	<input checked="" type="checkbox"/>
✓ 84HL1, Green signal lamps (Circuit breaker open)	<input checked="" type="checkbox"/>
✓ 84HL2, Red signal lamps (Circuit breaker closed)	<input checked="" type="checkbox"/>
✓ 84HL3, Yellow signal lamps (Circuit breaker tripped)	<input checked="" type="checkbox"/>
✓ 82A1, Residual current monitoring check	<input checked="" type="checkbox"/>

Service sequence

Insert the key; press and rotate 180° clockwise to "I" position to insert the incoming power connector switch	
Remove the key from the left side rotary handle	
Insert the key in the right side rotary handle, press and rotate 90° clockwise to "I" position; the main incoming circuit breaker is closed and the feeder is now operating	

See attachment Lafer ME_CUB ITA ENG manual drawer operation

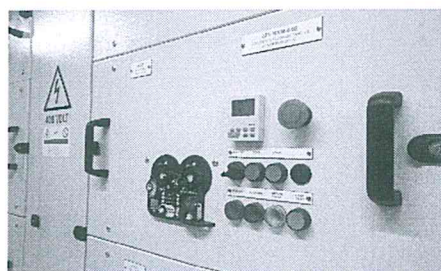
7.4.2. DOL drawer commissioning/operating (column 3 and 4)

The DOL drawer column 3 and 4 is equipped with

- Q.ty 4 Type M 3 poles drawers DOL motor starter > 7,5 kW and <75kW

Front DOL Drawer type M (3 poles) Motor starter > 7,5 Kw and <75kW see below picture

- **53SA1**, TEST-OFF-REMOTE black selector switch with 3 maintained position.
- **53SB2**, STOP red push-button
- **53SB3**, START green push-button
- **55SB1**, Lamp Test blue push-button
- **55HL1**, Red signal lamps (RUN - MOTOR ON)
- **55HL2**, Green signal lamps (STOP- MOTOR OFF)
- **55HL3**, Yellow signal lamps (MOTOR FAULT)
- **53SB1**, Mushroom Emergency stop push button



Motor starter drawer are connecting in according the doc. 01251-100-S07-E10-0001

DOL motor starter is equipped with:

- **QF50.1**, LV moulded case circuit breaker
- **UMC100.3 UC** controller with UMC panel LCD DISPLAY

Test sequence

Check that the MCC is energized	<input checked="" type="checkbox"/>
Insert the drawer	<input checked="" type="checkbox"/>

<ul style="list-style-type: none"> ✓ Check the correct function of the signal lamps by pushing the: ✓ 55SB1 Lamp test push button ✓ 55HL1, Green signal lamps (Circuit breaker open) ✓ 55HL2, Red signal lamps (Circuit breaker closed) ✓ 55HL3, Yellow signal lamps (Circuit breaker tripped) 	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>
---	---

<p>Turn in "TEST" position the selector switch 53SA1 to TEST the control circuit UMC100.3 (contactor closed → no power on the outgoing clamps)</p> <ul style="list-style-type: none"> ✓ Check the status of the UMC100.3 ✓ 55HL2, green lamp "ON" means contactor open (Motor off) ✓ 55HL1, red lamp "ON" means contactor closed (Motor on) ✓ 55HL3, yellow lamp of reset pushbutton "ON" means main circuit breaker TRIP or UMC100.3 fault 	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>
---	--

<p>By the push button installed on the front of the drawer is possible to command the motor contactor:</p> <ul style="list-style-type: none"> ✓ 53SB1 Mushroom Stop pushbutton (emergency Stop) ✓ 53SB3 Start command ✓ 55HL1, red lamp "ON" means contactor closed (Motor on) ✓ 53SB2 Stop command ✓ 55HL2, green lamp "ON" means contactor open (Motor off) ✓ 55HL3, yellow lamp of reset pushbutton "ON" means main circuit breaker TRIP or UMC100.3 fault 	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>
---	--

	<u>EGPC – THE EGYPTIAN GENERAL PETROLEUM CORPORATION.</u>	 COSTRUZIONI ELETTROTECNICHE CEAR s.r.l.
---	--	--

CRUDE OIL TANK FARM 1251-100

EPM MODULE 030-EPM1 DRY TYPE TRANSFORMER

SAT

Commissioning and Site Integration Test Procedures

1	16/11/2020	Approval	BP	LS	GA		
0	30/10/2020	Approval	BP	LS	GA		
Rev.	Date	Issued For	Prepared	Checked	Approved	Approved	Approved
<u>Notes:</u>			EGPC – THE EGYPTIAN GENERAL PETROLEUM CO.				
			Contract Number: 1251-100-500-16				
			Enppi Ref.: 01251-100-S07-P06-0003 R.1				
					Language: E		Total Pages:9
This document is the property of Enppi. It must not be stored reproduced or disclosed to others without written authorization from the COMPANY							

	<p style="text-align: center;"><u>EGPC – THE EGYPTIAN GENERAL PETROLEUM CORPORATION.</u></p>	
---	---	---

INDEX

INTRODUCTION SAT PROCEDURE	3
Aim of the document.....	3
Personnel involved in the SAT.	3
DESCRIPTION OF THE TESTS.....	4
1. Documentation.....	4
2. Visual Check (without voltage supply).....	6
3. H.V. Cable Connection box.....	7
4. Earthing Connection Check (without voltage supply).....	8
5. H.V. Transformer energization 6,6 kV from Enppi substation (Power ON).....	9

INTRODUCTION SAT PROCEDURE

Aim of the document.

This document is the FAT, Functional & Performance Test for the EPM Electrical Power Module

The document is the acceptance protocol concerning the characteristics of the supplied EPM

Definition:

Supplier: CEAR


Customer: ENPPI

Client: PPC

Personnel involved in the SAT.

The table below shows the people who participate at the activity of the SAT (Commissioning and Site Integration Test): the present people must sign next to their name.

CEAR and ENPPI can use an external Inspector / Agency or third-party Body.

Name and Surname	Company/Position	Signature	Date
Ahmed Nadeem	ENPPI		17/7/2021
M. Ibrahim	PPC		17/7/2021
COTI COTIM PABLO	CEAR		17-07-21
	CEAR		

DESCRIPTION OF THE TESTS

Visual test will be performed to verify the good workmanship, the absence of sharpen edge, the absence of damages on the welds.

Dimensional Check will be performed to check if the dimensions of the component are in tolerances as per manufacturing drawings.

Surface Painting check will be performed to check the painting coating and final internal/external color.

Identification and Marking Check

Routine test certificate check

1. Documentation

Following a list of the relevant documents used to perform the SAT (please fill the table with the last revision number of the documents used).

Document No.	Rev.	Description
01251-100-S07-B01-0001	R.7	EPM General Arrangements
01251-100-S07-E99-0007	R.4	Dry Type Transformer General Arrangement
01251-100-S07-K09-0005	R.3	EPM Transformer Data Sheet Supplier
01251-100-S07-K11-0005	R.4	EPM Filled in Purchaser Transformer Data Sheet
01251-100-S07-K11-0006	R.5	EPM Filled in Purchaser Bus Duct Data Sheet
01251-100-S07-E99-0006	R.4	LV Bus Duct General Arrangement
01251-100-S07-K12-0001	R.1	EPM Noise Data Sheet
01251-100-S07-E99-0009	R.4	Earthing system layout
01251-100-S07-E10-0001	R.5	LVSWG Single Line Diagram

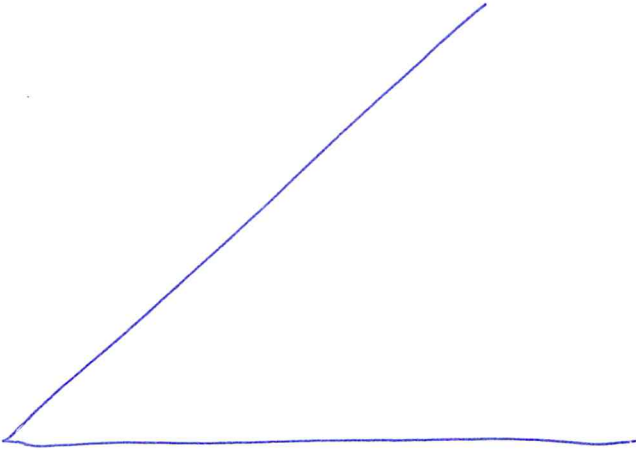


**EGPC – THE EGYPTIAN GENERAL
PETROLEUM CORPORATION.**

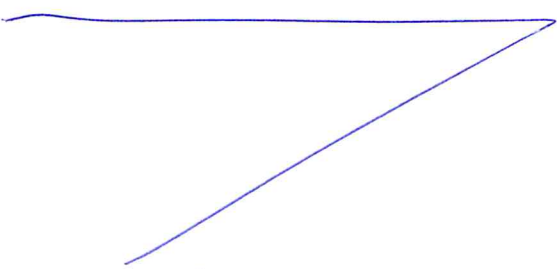
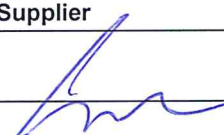
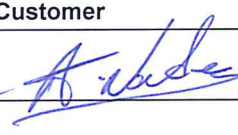



Documentation check				
1.1	Aim	Check the presence of the project documentation.		
	Pre-requisites	N.A.		
	Test description	Check the presence and the state of the documentation listed on chapter 1.2 of the FAT procedure.		
	Acceptance criteria	All the documentation listed on chapter 1.1 Section 1 of the FAT procedure have to be present.		
	Notes			
	Executed	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Result	<input checked="" type="checkbox"/> Positive <input type="checkbox"/> Negative
Date	Supplier	Customer	Client	
	<i>17-07-2017</i>	<i>Comen</i>	<i>Arakdes</i>	<i>Bu</i>

2. Visual Check (without voltage supply)

Visual Check		Aim		Visual check of the good construction of the transformer and the transformer box	Pre-requisites	N.A.	Test description	Visual test will be performed to verify the good workmanship, the absence of sharpen edge, the absence of damages.	Acceptance criteria	Visual test and relevant photo	Notes	
<p> HV CABLES IS TERMINATED BUT IS NOT CONNECTED </p> 												
Executed	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Result	<input checked="" type="checkbox"/> Positive <input type="checkbox"/> Negative	Supplier	Customer	Client	Date	17-07-21	Signature	Signature	Signature	

3. H.V. Cable Connection box

3.1	HV Cable Connection box			
	Aim	Verify the connection between transformer and HV box		
	Pre-requisites	N.A.		
	Test description	Visual connection marking check and tightening bolt control		
	Acceptance criteria	The dimensions must be in compliance with the values reported on the following documents: 01251-100-S07-E99-000 7 Dry Type transformer General Arrangements		
	Marking phase check			
	Notes	<p>IMPORTANT NOTE All operations concerning the H.V and MCT cable installation, cable connection ,6,6 kV power supply control, cable insulation and relevant tests are in charge of Enppi electrical commissioning department. Before supply the transformer with 6,6 kV all test must be done and certified with a test report.</p> <p>M.V. COBES IS NOT CONNECTED</p> 		
	Executed	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Result	<input checked="" type="checkbox"/> Positive <input type="checkbox"/> Negative
Date	Supplier	Customer	Client	
				

4. Earthing Connection Check (without voltage supply)

4.1	Earthing Connection continuity check			
	Aim		Verify the installation of the earthing connection	
	Pre-requisites		N.A.	
	Test description		The installation and the material must be in compliance with the values reported on the following documents: 01251-100-S07-E99-0009 Earthing System Layout 01251-100-S07-K009-0005 EPM Transformer Data Sheet Supplier	
	Acceptance Criteria		The resistance measured shall be at least $< \Omega$.	
	Instrument		Type: <i>MEGGGER</i> Mod.: <i>MT 90-2</i> S/N: Test Certificate:	
	Notes		Resistance value: <i>1</i> Ω 	
	Executed		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Result <input checked="" type="checkbox"/> Positive <input type="checkbox"/> Negative	
Date		Supplier		
Customer		Client		
<i>17-07-20</i>		<i>[Signature]</i>		
<i>[Signature]</i>		<i>[Signature]</i>		



**EGPC – THE EGYPTIAN GENERAL
PETROLEUM CORPORATION.**



5. H.V. Transformer energization 6,6 kV from Enppi substation (power on)

The activity is in charge of Enppi commissioning department

Power on transformer 6,6 kV			
Aim	Energize the EPM transformer from the substation Enppi		
Pre-requisites	All operations and safety rules must be in charge of Enppi		
Test description	Energizing operation from the substation		
Acceptance Criteria	Verify the voltage value in accordance with the 01251-100-S07-K009-0005 EPM Transformer t Data Sheet Supplier		
Instrument	Verify and check the voltage value in the substation room		
5.1	Notes	<p>IMPORTANT NOTE All operations concerning the H.V and MCT cable installation, cable connection ,6,6 kV power supply control, cable insulation and relevant tests are in charge of Enppi electrical commissioning department. Before supply the transformer with 6,6 kV all test must be done and certified with a test report.</p> <p>Report test check Power supplykV 17-07-21 6.6kv L1-L2:kV IS NOT AVAILABLE L2-L3:kV AFTER POWER UP L3-L1:kV</p> <p>Insulation resistance test H.V cable PERFORMED TEST. Resistance value: Ω</p> <p>Dielectric test H.V. cable</p>	
Executed	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Result	<input checked="" type="checkbox"/> Positive <input type="checkbox"/> Negative
Date	Supplier	Customer	Client
17-07-21			

CRUDE OIL TANK FARM 1251-100

EPM MODULE 030-EPM1

BUS DUCT

SAT Commissioning and Site Integration Test Procedures

1	17/11/2020	Approval	BP	LS	GA		
0	30/10/2020	Approval	BP	LS	GA		
Rev.	Date	Issued For	Prepared	Checked	Approved	Approved	Approved
<u>Notes:</u>			EGPC – THE EGYPTIAN GENERAL PETROLEUM CO.				
			Contract Number: 1251-100-510-16				
			Enppi Ref.: 01251-100-S07-P06-0004 R.1				
					Language: E		Total Pages:9
This document is the property of Enppi It must not be stored reproduced or disclosed to others without written authorization from the COMPANY							

	<p align="center"><u>EGPC – THE EGYPTIAN GENERAL PETROLEUM CORPORATION.</u></p>	
---	--	---

INDEX

Aim of the document.....	3
Personnel involved in the SAT.....	3
DESCRIPTION OF THE TESTS.....	4
1 Documentation.....	4
2. Visual Check	6
3. Electrical Safety Check	7

INTRODUCTION BUS DUCT PROCEDURE

Aim of the document.

This document is the FAT, Functional & Performance Test for the EPM Electrical Power Module

The document is the acceptance protocol concerning the characteristics of the supplied EPM

Definition:

Supplier: CEAR

Customer: ENPPI

Client: PPC

Personnel involved in the SAT.

The table below shows the people who participate at the activity of the SAT (Commissioning and Site Integration Test): the present people must sign next to their name.

CEAR and ENPPI can use an external Inspector / Agency or third-party Body.

Name and Surname	Company/Position	Signature	Date
Ahmed Abdelhakem	ENPPI		17/7/2021
M. Ibrahim	PPC		17/7/2021
COTI, COTI, FABIO	CEAR		17-07-21
	CEAR		

DESCRIPTION OF THE TESTS

Visual test will be performed to verify the good workmanship, the absence of sharpen edge, the absence of damages on the welds.

Dimensional Check will be performed to check if the dimensions of the component are in tolerances as per manufacturing drawings.

Surface Painting check will be performed to check the painting coating and final internal/external color.

Identification and Marking Check will

Safety check insulation and dielectric test

1 Documentation.

Following a list of the relevant documents used to perform the FAT (please fill the table with the last revision number of the documents used).

Document No.	Rev.	Description
01251-100-S07-B01-0001	R.7	EPM General Arrangements
01251-100-S07-E99-0006	R.4	LV Bus Duct General Arrangement
01251-100-S07-K09-0006	R.2	EPM Bus Duct Data Sheet Supplier
01251-100-S07-K11-0006	R.5	EPM Filled in Purchaser Bus Duct Data Sheet
01251-100-S07-E99-0007	R.4	Dry Type Transformer General Arrangement

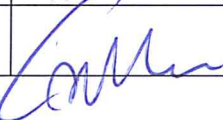

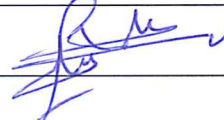


**EGPC – THE EGYPTIAN GENERAL
PETROLEUM CORPORATION.**

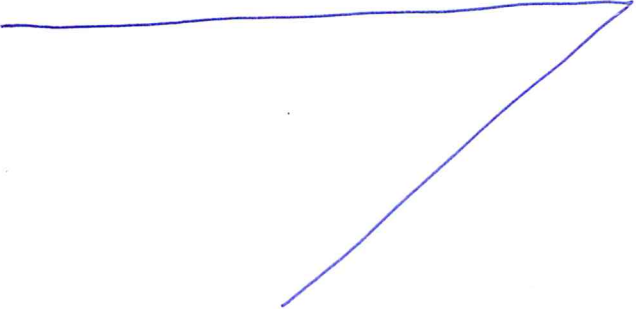


Documentation check				
1.1.1	Aim	Check the presence of the project documentation.		
	Pre-requisites	N.A.		
	Test description	Check the presence and the state of the documentation listed on chapter 1.2 of the FAT procedure.		
	Acceptance criteria	All the documentation listed on chapter 1.1 Section 1 of the FAT procedure have to be present.		
	Notes			
	Executed	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Result	<input checked="" type="checkbox"/> Positive <input type="checkbox"/> Negative
	Date	Supplier	Customer	Client
17-07-21				

2. Visual Check

2.1	Visual Check					
	Aim	Visual check of the good construction of the Bus Duct				
	Pre-requisites	N.A.				
	Test description	Visual test will be performed to verify the good workmanship, the absence of sharpen edge, the absence of damages.				
	Acceptance criteria	Visual test and relevant photo				
	Notes					
	Executed	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Result	<input checked="" type="checkbox"/> Positive	<input type="checkbox"/> Negative
	Date	Supplier	Customer	Client		
17-07-21						

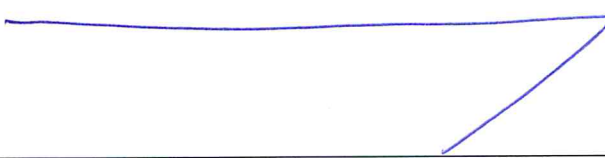
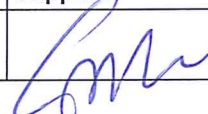
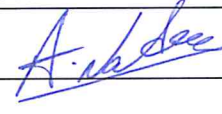
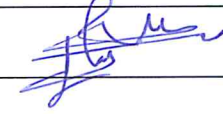
3. Electrical Safety Check

Electrical Safety Check Insulation resistance measuring	
Aim	Measure the insulation resistance between each phase and neutral against earth (with the remaining phases and neutral connected to the earth).
Pre-requisites	N.A.
Test description	The insulation resistance tests shall be carried out with all manually operated and latched type switching devices in the closed position and main fuses installed.
Acceptance criteria	The insulation resistance measured shall be at least 10 MΩ.
Instrument	Type: <u>MEGOM 500</u> Mod.: <u>MT 60-2</u> S/N : <u> </u> Test Certificate : <u> </u>
3.1.1 Test results	Value checked L1-E: <u>10.6</u> Ω L2-E: <u>16.6</u> Ω L3-E: <u>15.6</u> Ω N-E: <u>21.6</u> Ω 
Notes	
Executed	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Result <input checked="" type="checkbox"/> Positive <input type="checkbox"/> Negative
Date	Supplier: <u> </u> Customer: <u> </u> Client: <u> </u>
<u>17-07-20</u>	<u> </u> <u>A. Abdelaziz</u> <u> </u>



**EGPC – THE EGYPTIAN GENERAL
PETROLEUM CORPORATION.**

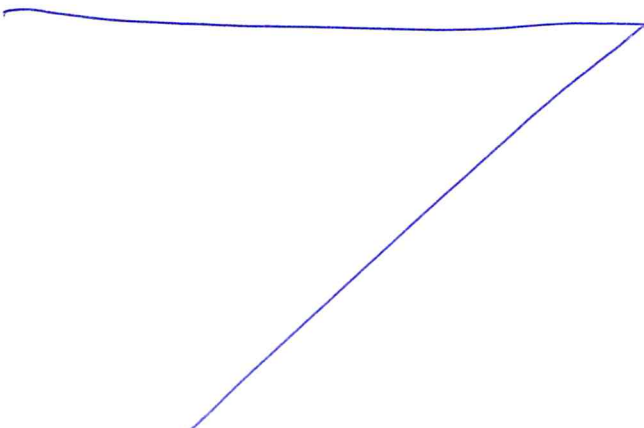
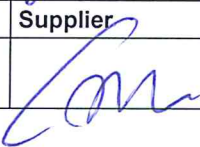
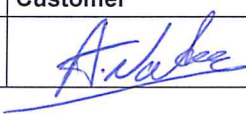



Electrical Safety Check Dielectric test for bus bars				
3.1.2	Aim	Perform a dielectric test of the main circuits (400V ac) in accordance with CEI EN 61439-1 standard.		
	Pre-requisites	N.A.		
	Test description	Withstand voltage should be 2500 V ac for 1 minute. Dielectric tests shall be done on 10% of the number of similar units with a minimum of 2 units.		
	Acceptance criteria	Please refer to chapter 10.9.2.4 of the CEI EN 61439-1 Standard.		
	Instrument	Type: <u>METROL</u> Mod.: <u>MJ 2270</u> S/N: <u>S11005</u> Test Certificate: <u>3006-02</u>		
	Test results	<u>L1-0 = 2.5 MA</u> <u>L2-0 = 2.5 MA</u> <u>L3-0 = 2.5 MA</u> <u>W-0 = 2.5 MA</u> 		
	Notes			
	Executed	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Result	<input checked="" type="checkbox"/> Positive <input type="checkbox"/> Negative
Date	Supplier	Customer	Client	
17-07-21				



**EGPC – THE EGYPTIAN GENERAL
PETROLEUM CORPORATION.**



Earthing Bus Duct continuity check				
3.1.3	Aim	Verify t the installation of the earthing system of the Bus Duct		
	Pre-requisites	N.A.		
	Test description	The installation and the material must be in compliance with the values reported on the following documents: 01251-100-S07-E99-0009 Earthing System Layout 01251-100-S07-K009-0006 EPM Bus Duct Data Sheet Supplier 01251-100-S07-K011-0006 EPM Filled in Purchaser Bus Duct Data Sheet		
	Acceptance Criteria	The resistance measured shall be at least $< \Omega$.		
	Instrument	Type: <u>Me6600n</u> Mod.: <u>MIT 920-2</u> S/N : Test Certificate : /		
	Notes	Value checked: <u>41</u> Ω 		
	Executed	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Result	<input checked="" type="checkbox"/> Positive <input type="checkbox"/> Negative
Date	Supplier	Customer	Client	
17-07-21				



**EGPC – THE EGYPTIAN GENERAL
PETROLEUM CORPORATION.**



CRUDE OIL TANK FARM 1251-100

EPM MODULE 030-EPM1

DP-1 Indoor Distribution Panel

SAT

Commissioning and Site Integration Test Procedures

1	16/11/2020	Approval	BP	LS	GA		
0	30/10/2020	Approval	BP	LS	GA		
Rev.	Date	Issued For	Prepared	Checked	Approved	Approved	Approved
<u>Notes:</u>			EGPC – THE EGYPTIAN GENERAL PETROLEUM CO.				
			Contract Number: 1251-100-16-7				
			Enppi Ref.: 01251-100-S07-P06-0007 R.1				
					Language: E		Total Pages. 11
This document is the property of Enppi. It must not be stored reproduced or disclosed to others without written authorization from the COMPANY							

INDEX

INTRODUCTION SAT PROCEDURE.....	3
Aim of the Document.....	3
1.1 Personnel involved in the SAT	3
1.2 DOCUMENTATION.....	4
2. TESTING STRATEGY.....	4
3. INSTALLATION TESTING.....	5
3.1 Documentation check.....	5
3.2 INSTALLATION CHECK.....	6
3.3 POWER SUPPLY CHECK.....	8
4. FUNCTIONAL TESTING.....	9
4.1 Electrical equipment.....	9
5 COMMISSIONING AND START-UP PROCEDURES DP 1.....	10
5.1 Preliminary operation.....	10
5.1.1. Mechanical assembling.....	10
5.1.2 Electrical / Instrument connecting.....	10
5.1.3 Check and Test with Voltage supply.....	10
5.1.4 Test the circuit one by one and not at the same time.....	11

1.2 DOCUMENTATION

Following a list of the relevant documents used to perform the FAT (please fill the table with the last revision number of the documents used).

Document No.	Rev.	Description
01251-100-S07-B01-0001	R.7	General Arrangement
01251-100-S07-E02-0002	R.4	Indoor Light Distribution Panel Overall Dimensions Panel Layout
01251-100-S07-E10-0002	R.4	Indoor Panel Single & Wiring diagram.
01251-100-S07-K11-0007	R.4	EPM Filled in DP-1 Indoor Distribution Panel Data Sheet
01251-100-S07-E05-0002	R.5	EPM Internal Cable schedule

2. TESTING STRATEGY


The testing strategy includes the following two phases.

The **Installation** testing phase is developed to test the:

- Documentation;
- Mechanical installation;
- Electrical installation.

The **Functioning** testing phase is developed to test the functioning of the:

- Electrical equipment;

	<p align="center"><u>EGPC – THE EGYPTIAN GENERAL PETROLEUM CORPORATION.</u></p>	
---	--	---

INTRODUCTION SAT PROCEDURE

Aim of the document.

This document is the FAT, Functional & Performance Test for the Indoor DP-1 Distribution Panel of the EPM electrical Power Module

The document is the acceptance protocol concerning the characteristics of the supplied DP-1 Panel

Definition:

Supplier: CEAR

Customer: ENPPI

Client: PPC

1.1 Personnel involved in the SAT

The table below shows the people who participate at the activity of the SAT (Commissioning and SAT Integration Test) the present people must sign next to their name.

CEAR and ENPPI can use an external Inspector / Agency or third-party Body.

Name and Surname	Company/Position	Signature	Date
Ahmed Nadeem	ENPPI		17/7/2021
M. Ibrahim	PPC		17/7/2021
COM COTTON PABLO	CEAR		27-07-21
	CEAR		

3.2 INSTALLATION CHECK

3.2.1	DP-1 Indoor Distribution Panel			
	Aim	Check the DP-1 identification label.		
	Pre-requisites	N.A.		
	Test description	Visual inspection.		
	Acceptance criteria	The DP-1 identification label must be in compliance with the following documents: 01251-100-S07-E10-0002 Indoor Panel Single Line Diagram 01251-100-S07-E02-0002 Indoor Overall Dimension Panel Layout		
	Instrument	N.A.		
	Notes			
	Executed	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Result	<input checked="" type="checkbox"/> Positive <input type="checkbox"/> Negative
	Date	Supplier	Customer	Client
17-07-21	<i>Cam</i>	<i>A. Abdel</i>	<i>[Signature]</i>	

3.2.2	DP-1 Indoor Distribution Panel Front lay-out			
	Aim	Check the front DP-1 layout.		
	Pre-requisites	N.A.		
	Test description	Visual inspection.		
	Acceptance criteria	The front layout must be in compliance with the following documents: 01251-100-S07-E10-0002 Indoor Panel Single Line Diagram 01251-100-S07-E02-0002 Indoor Overall Dimension Panel Layout.		
	Instrument	N.A.		
	Notes			
	Executed	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Result	<input checked="" type="checkbox"/> Positive <input type="checkbox"/> Negative
	Date	Supplier	Customer	Client
17-07-21	<i>Cam</i>	<i>A. Abdel</i>	<i>[Signature]</i>	

3. INSTALLATION TESTING

3.1 Documentation check.

3.1	Documentation check.			
	Aim	Check the presence of the project documentation.		
	Pre-requisites	N.A.		
	Test description	Check the presence and the state of the documentation listed on chapter 1.2 of the FAT procedure.		
	Acceptance criteria	All the documentation listed on chapter 1.2 of the FAT procedure have to be present.		
	Notes			
	Executed	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Result	<input checked="" type="checkbox"/> Positive <input type="checkbox"/> Negative
	Date	Supplier	Customer	Client
	17-07-21			



**EGPC – THE EGYPTIAN GENERAL
PETROLEUM CORPORATION.**



3.2.3	Mechanical and electrical interlocks, door and isolating handle interlocks, key interlocks, etc.			
	Aim	Check the functioning of the mechanical and electrical interlocks, door and isolating handle interlocks, key interlocks, etc..		
	Pre-requisites	N.A.		
	Test description	Functional test of all the mechanical and electrical interlocks.		
	Acceptance criteria	All the mechanical and electrical interlocks described on the following documents must be operative: The DP-1 arrangement must be in compliance with the following documents: 01251-100-S07-E10-0004 UPS Single Line Diagram 01251-100-S07-E02-0002 Indoor Overall Dimension Panel Layout		
	Instrument	N.A.		
	Notes			
	Executed	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Result	<input checked="" type="checkbox"/> Positive <input type="checkbox"/> Negative
Date	Supplier	Customer	Client	
17-07-20	<i>[Signature]</i>	<i>[Signature]</i>	<i>[Signature]</i>	

3.3 POWER SUPPLY CHECK

3.3.1

Main circuits Power supply			
Aim	Check the main circuits power supply.		
Pre-requisites	N.A.		
Test description	Check the presence and the value of the main power supply voltage.		
Acceptance criteria	The main circuits power supply voltage should be 400V 3P+N 50HZ.		
Instrument	Type: HT 17314	Mod.: HT3300	S/N: 88600509
Measured voltage	Value	400 V	Frequency
Notes	50 HZ		
Executed	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Result
Date	Supplier	Customer	Client
<div>17-07-21</div> <div>Can</div> <div>H. Abdelaziz</div> <div>J. M. J.</div>			

3.3.2

Auxiliary circuits Power supply			
Aim	Check the auxiliary circuits power supply.		
Pre-requisites	N.A.		
Test description	Check the presence and the value of the auxiliary power supply voltage.		
Acceptance criteria	The auxiliary circuits power supply voltage should be 230V 1P+N 50HZ.		
Instrument	Type: HT 17314	Mod.: HT3300	S/N: 88600509
Measured voltage	Value	230 V	Frequency
Notes	50 HZ		
Executed	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Result
Date	Supplier	Customer	Client
<div>17-07-21</div> <div>Can</div> <div>H. Abdelaziz</div> <div>J. M. J.</div>			

4. FUNCTIONAL TESTING.

4.1 Electrical equipment.

4.1	DP-1 operating conditions.				
	Aim	Check the functioning of the DP-1			
	Pre-requisites	N.A.			
	Test description	Check the circuit breaker, signal lamps and verify the output distribution			
	Acceptance criteria	The electrical functioning of the DP-1 must be in compliance with the following document: 01251-100-S07-E10-0002 Indoor Panel Single & Wiring Diagram			
	Notes				
	Executed	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Result	<input checked="" type="checkbox"/> Positive <input type="checkbox"/> Negative	
Date	Supplier	Customer	Client		
	17-07-21	Cam	A. el-Dessouky	[Signature]	

5 COMMISSIONING AND START-UP PROCEDURES DP 1 INDOOR PANEL

5.1 Preliminary operation

Before starting-up the electrical and instrumentation commissioning of Indoor Power Distribution Panel all the lighting circuit will be terminated and all the followings point should be checked and confirmed:

The indoor provide supply the internal EPM circuit and 230V 50 Hz internal and external socket.

Each circuit is controlled by the relevant circuit breaker.

5.1.1. Mechanical assembling

	Check equipment's alignment	<input checked="" type="checkbox"/>
	Check all bolts fixing	<input checked="" type="checkbox"/>

5.1.2 Electrical / Instrument connecting

	Check cabling connection	<input checked="" type="checkbox"/>
	Check insulated test of cabling system before energizing on the outgoing	<input checked="" type="checkbox"/>

After confirmation, the distribution Panel is ready for electrical test without voltage supply
Field test check

Check and Test without voltage supply

Before energising the system, all the followings point should be checked and confirmed:

	Check earthing system connection from the external grounding system to the Indoor Power Distribution Panel ground bar (PE bar).	<input checked="" type="checkbox"/>
	Check and/or set all electrical protection as per the wiring diagram	<input checked="" type="checkbox"/>

After confirmation, the Indoor Power Distribution Panel is ready for electrical and instrument test with power supply.

5.1.3 Check and Test with Voltage supply

Before energizing the indoor panel, all breaker must be open.

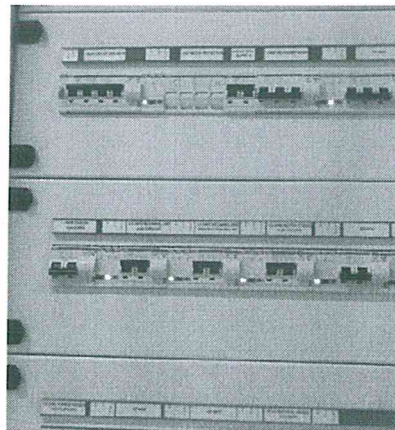
The indoor panel DP 1 is provided with the following measuring control (see picture):



- Main circuit breaker
- Ammeter and relevant ammeter switch
- Voltmeter and relevant voltmeter switch

5.1.4 Test the circuit one by one and not at the same time in order to check correctly

Each lighting circuit is controlled by the relevant switch breaker, each breaker is equipped with 3 signal lamps green "OFF", red "ON", yellow "FAULT".



The next description includes the action for each section step by step.
For the function of each circuit breaker (Refer to the 01251-100-S07-E10-0002-Indoor Panel Single Line and Wiring Diagram)

The operation is the following:

Check the voltage supply on the 3 P+N on the Voltmeter PV1 by the voltmeter switch SV 1 close the fuse switch QU1.1
Check by the Lamp Test SB1 the correct function of the signal lamp Close the breaker QF1.1 and supply the aux. transformer for signal lamp.
By the signal lamp HL1.1/2.1/3.1 check the status of main circuit breaker
Close the main breaker QF1 to supply all circuit breaker Closed the breaker QF0 for pilot circuit emergency light
Close the Circuit Breaker QF2 to QF12 step by step to supply circuit and check the output voltage by voltmeter. For Each circuit breaker are provided the following signal lamp: -Red Lamp Circuit breaker close -Green Lamp Circuit breaker open -Yellow Lamp Fault

	<p align="center"><u>EGPC – THE EGYPTIAN GENERAL PETROLEUM CORPORATION.</u></p>	
---	--	---

CRUDE OIL TANK FARM 1251-100

EPM MODULE 030-EPM1

DP-2 Outdoor Distribution Panel

SAT

Commissioning and Site Integration Test Procedures

1	16/11/2020	Approval	BP	LS	GA		
0	30/10/2020	Approval	BP	LS	GA		
Rev.	Date	Issued For	Prepared	Checked	Approved	Approved	Approved
<u>Notes:</u>			EGPC – THE EGYPTIAN GENERAL PETROLEUM CO.				
			Contract Number: 1251-100-500-16				
			Enppi Ref.: 01251-100-S07-P06-0008 R.1				
					Language: E		Total Pages:13
This document is the property of Enppi It must not be stored reproduced or disclosed to others without written authorization from the COMPANY							

	<p align="center"><u>EGPC – THE EGYPTIAN GENERAL PETROLEUM CORPORATION.</u></p>	
---	--	---

INDEX

INTRODUCTION SAT PROCEDURE.....	3
Aim of the document.....	3
1.1 Personnel involved in the SAT.....	3
1.2 DOCUMENTATION.....	4
2. TESTING STRATEGY.....	4
3. INSTALLATION TESTING.....	5
3.1 Documentation check.	5
3.2 General construction Check.....	6
3.3 Power supply Check.	9
4. FUNCTIONAL TESTING.....	10
4.1 Electrical equipment.	10
5 COMMISSIONING AND START-UP PROCEDURES DP 2 OUTDOOR PANEL.....	11
5.1 Preliminary operation.....	11
5.1.1. Mechanical assembling	11
5.1.2 Electrical / Instrument connecting	11
5.1.3 Check and Test with Voltage supply	11
5.1.4 Test the circuit one by one and not at the same time in order to check	12
correctly	12

INTRODUCTION SAT PROCEDURE

Aim of the document.

This document is the FAT, Functional & Performance Test for the Outdoor DP-2 Distribution Panel of the EPM electrical Power Module

The document is the acceptance protocol concerning the characteristics of the supplied DP-2 Panel

Definition:

Supplier: CEAR

Customer: ENPPI

Client: PPC

1.1 Personnel involved in the SAT

The table below shows the people who participate at the activity of the SAT (Commissioning and Site Integration Test Procedures): the present people must sign next to their name.

CEAR and ENPPI can use an external Inspector / Agency or third-party Body.

Name and Surname	Company/Position	Signature	Date
Ahmed Mohamed	ENPPI		17/7/2021
M. Elbordi	PPC		17/7/2021
CORR. CORR. CORR. FABIO	CEAR		17-07-21
	CEAR		

1.2 DOCUMENTATION

Following a list of the relevant documents used to perform the FAT (please fill the table with the last revision number of the documents used).

Document No.	Rev.	Description
01251-100-S07-B01-0001		General Arrangement
01251-100-S07-E02-0003		Outdoor Light Distribution Panel Overall Dimensions Panel Layout
01251-100-S07-E10-0003		Outdoor Panel Single & Wiring diagram.
01251-100-S07-K11-0008		EPM Filled in DP-2 Outdoor Distribution Panel Data Sheet
01251-100-S07-E05-0002		EPM Internal Cable schedule

2. TESTING STRATEGY

The testing strategy includes the following two phases.

The **Installation** testing phase is developed to test the:

- Documentation;
- Mechanical installation;
- Electrical installation.


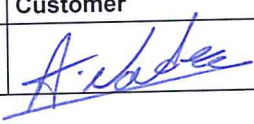

The **Functioning** testing phase is developed to test the functioning of the:

- Electrical equipment

	EGPC – THE EGYPTIAN GENERAL PETROLEUM CORPORATION.	 <small>COSTRUZIONI ELETTROTECNICHE CEAT s.r.l.</small>
---	---	---

3. INSTALLATION TESTING.

3.1 Documentation check.

3.1	Documentation check.			
	Aim	Check the presence of the project documentation.		
	Pre-requisites	N.A.		
	Test description	Check the presence and the state of the documentation listed on chapter 1.2 of the FAT procedure.		
	Acceptance criteria	All the documentation listed on chapter 1.2 of the FAT procedure have to be present.		
	Notes			
	Executed	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Result	<input checked="" type="checkbox"/> Positive <input type="checkbox"/> Negative
	Date	Supplier	Customer	Client
17-07-21				

3.2 General construction Check

3.2.1	Terminal block connections.			
	Aim	Check the terminal block connections (wiring and tightening).		
	Pre-requisites	N.A.		
	Test description	Visual inspection and tightening test (with a screw driver).		
	Acceptance criteria	The terminal block connections must be in compliance with the following documents: 01251-100-S07-E10-0003 Outdoor Panel Single & Wiring Diagram 01251-100-S07-E02-0003 Outdoor DP-2 Overall Dimension Panel Layout		
	Instrument	Screw driver.		
	Notes			
	Executed	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Result	<input checked="" type="checkbox"/> Positive <input type="checkbox"/> Negative
	Date	Supplier	Customer	Client
	17-07-21	[Signature]	A. Abdel [Signature]	[Signature]

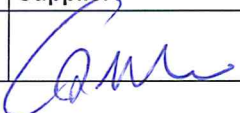
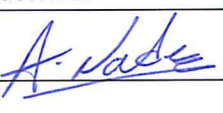
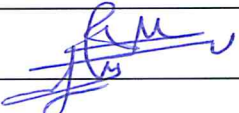
3.2.2	Earthing connections.			
	Aim	Check the earthing connections (wiring and tightening).		
	Pre-requisites	N.A.		
	Test description	Visual inspection and tightening test (with a screw driver or a wrench).		
	Acceptance criteria	The earthing connections must be in compliance with the following documents: 01251-100-S07-E10-0003 Outdoor Panel Single & Wiring Diagram 01251-100-S07-E99-0009 Earthing System Internal External Layout		
	Instrument	Screw driver, Wrench.		
	Notes			
	Executed	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Result	<input checked="" type="checkbox"/> Positive <input type="checkbox"/> Negative
	Date	Supplier	Customer	Client
	17-07-21	[Signature]	A. Abdel [Signature]	[Signature]

	EGPC – THE EGYPTIAN GENERAL PETROLEUM CORPORATION.	 <small>COSTRUZIONI ELETTRICHE CEAR s.r.l.</small>
---	---	--

3.2.3	Electrical equipment labels.			
	Aim	Check the equipment labels.		
	Pre-requisites	N.A.		
	Test description	Visual inspection.		
	Acceptance criteria	The electrical equipment labels must be in compliance with the following document: 01251-100-S07-E02-0002 Indoor Overall Dimension Panel Layout		
	Instrument	N.A.		
	Notes			
	Executed	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Result	<input checked="" type="checkbox"/> Positive <input type="checkbox"/> Negative
	Date	Supplier	Customer	Client
	17-07-21	Comin	Arabes	Alm

3.2.4	DP-2 Cleanliness of the equipment			
	Aim	Check the cleanliness of the equipment.		
	Pre-requisites	N.A.		
	Test description	Visual inspection.		
	Acceptance criteria			
	Instrument	N.A.		
	Notes			
	Executed	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Result	<input checked="" type="checkbox"/> Positive <input type="checkbox"/> Negative
	Date	Supplier	Customer	Client
	17-07-21	Comin	Arabes	Alm

	<p align="center"><u>EGPC – THE EGYPTIAN GENERAL PETROLEUM CORPORATION.</u></p>	
---	--	---

3.2.5	Mechanical and electrical interlocks, door and isolating handle interlocks, key interlocks, etc.			
	Aim	Check the functioning of the mechanical and electrical interlocks, door and isolating handle interlocks, key interlocks, etc..		
	Pre-requisites	N.A.		
	Test description	Functional test of all the mechanical and electrical interlocks.		
	Acceptance criteria	All the mechanical and electrical interlocks described on the following documents must be operative: The DP-2 arrangement must be in compliance with the following documents: 01251-100-S07-E10-0003 Outdoor Panel Single & Wiring Diagram 01251-100-S07-E02-0003 Outdoor DP-2 Overall Dimension Panel Layout		
	Instrument	N.A.		
	Notes			
	Executed	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Result	<input checked="" type="checkbox"/> Positive <input type="checkbox"/> Negative
	Date	Supplier	Customer	Client
17-07-21				

	EGPC – THE EGYPTIAN GENERAL PETROLEUM CORPORATION.	 <small>COSTRUZIONI ELETTRICHE CEAR s.r.l.</small>
---	---	--

3.3 Power supply Check



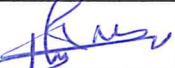
3.3.1	Main circuits Power supply				
	Aim	Check the main circuits power supply.			
	Pre-requisites	N.A.			
	Test description	Check the presence and the value of the main power supply voltage.			
	Acceptance criteria	The main circuits power supply voltage should be 400V 3P+N 50Hz.			
	Instrument	Type: <u>HT 1T 1A 147</u> Mod.: <u>HT 8700</u> S/N: <u>8J 600593</u> Test Certificate: <u>2544</u>			
	Measured voltage	Value	<u>400V</u>	Frequency	<u>50Hz</u>
	Notes				
	Executed	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Result	<input checked="" type="checkbox"/> Positive <input type="checkbox"/> Negative	
	Date	Supplier	Customer	Client	
	<u>17-07-21</u>	<u>Car</u>	<u>A. Abdel</u>	<u>[Signature]</u>	

3.3.2	Auxiliary circuits Power supply				
	Aim	Check the auxiliary circuits power supply.			
	Pre-requisites	N.A.			
	Test description	Check the presence and the value of the auxiliary power supply voltage.			
	Acceptance criteria	The auxiliary circuits power supply voltage should be 230V 1P+N 50Hz.			
	Instrument	Type: <u>HT 1T 1A 147</u> Mod.: <u>HT 8700</u> S/N: <u>8J 600593</u> Test Certificate: <u>2544</u>			
	Measured voltage	Value	<u>230V</u>	Frequency	<u>50Hz</u>
	Notes				
	Executed	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Result	<input checked="" type="checkbox"/> Positive <input type="checkbox"/> Negative	
	Date	Supplier	Customer	Client	
	<u>17-07-21</u>	<u>Car</u>	<u>A. Abdel</u>	<u>[Signature]</u>	

	<p align="center">EGPC – THE EGYPTIAN GENERAL PETROLEUM CORPORATION.</p>	 <small>COSTRUZIONI ELETTRICHE ARABE S.p.A.</small>
---	---	---

4. FUNCTIONAL TESTING.

4.1 Electrical equipment.

4.1.	DP-2 operating conditions.				
	Aim	Check the functioning of the DP-2			
	Pre-requisites	N.A.			
	Test description	Check the circuit breaker, signal lamps and verify the output distribution. Check the operation of photocell and relevant contactor.			
	Acceptance criteria	The electrical functioning of the DP-2 must be in compliance with the following document: 01251-100-S07-E10-0003 Outdoor Panel Single & Wiring Diagram			
	Notes				
	Executed	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Result	<input checked="" type="checkbox"/> Positive <input type="checkbox"/> Negative	
	Date	Supplier	Customer	Client	
17-07-21					

5 COMMISSIONING AND START-UP PROCEDURES DP 2 OUTDOOR PANEL

5.1 Preliminary operation

Before starting-up the electrical and instrumentation commissioning of Outdoor Power Distribution Panel all the lighting circuit will be terminated and all the followings point should be checked and confirmed:

The outdoor panel provide supply the perimetral and roof top EPM lighting circuits and all area external lighting system installed by Enppi.

Each circuit is controlled by the relevant circuit breaker.

5.1.1. Mechanical assembling

	Check equipment's alignment	<input checked="" type="checkbox"/>
	Check all bolts fixing	<input checked="" type="checkbox"/>

5.1.2 Electrical / Instrument connecting

	Check cabling connection	<input checked="" type="checkbox"/>
	Check insulated test of cabling system before energizing on the outgoing	<input checked="" type="checkbox"/>

After confirmation, the distribution Panel is ready for electrical test without voltage supply
Field test check

Check and Test without voltage supply

Before energising the system, all the followings point should be checked and confirmed:

	Check earthing system connection from the external grounding system to the Indoor Power Distribution Panel ground bar (PE bar).	<input checked="" type="checkbox"/>
	Check and/or set all electrical protection as per the wiring diagram	<input checked="" type="checkbox"/>

After confirmation, the Indoor Power Distribution Panel is ready for electrical and instrument test with power supply.

5.1.3 Check and Test with Voltage supply

Before energizing the indoor panel, all breaker must be open.

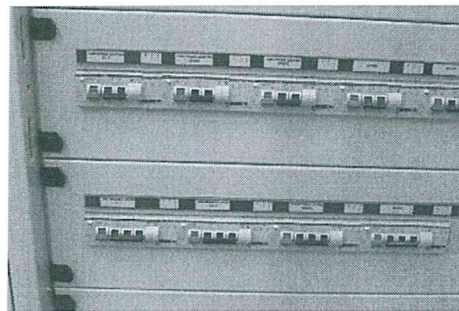
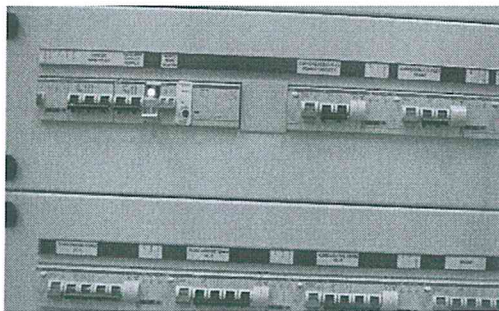
The indoor panel DP 2 is provided with the following measuring control (see picture):



- Main circuit breaker
- Ammeter and relevant ammeter switch
- Voltmeter and relevant voltmeter switch

5.1.4 Test the circuit one by one and not at the same time in order to check correctly

Each lighting circuit is controlled by the relevant switch breaker, each breaker is equipped with 3 signal lamps green "OFF", red "ON", yellow "FAULT".



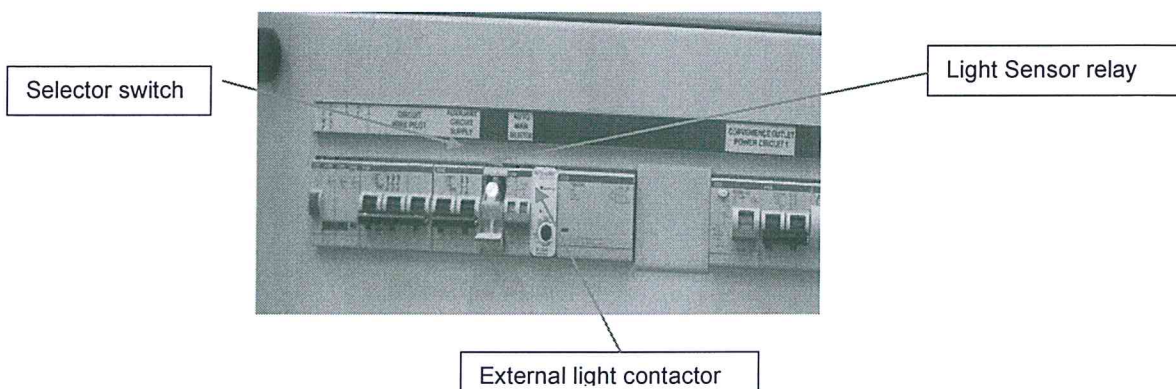
The outdoor panel is provided with the section for outdoor lighting system controlled by light sensor installed under the roof top.

This section is equipped with:

- Selector switch 3 position "Man.-0-Auto"
- Light sensor relay

In "Auto" position the lighting system is controlled by an external sensor that provide to command the contactor for external lighting system based on the daylight.

In "Manual" position the lighting system is always on, the sensor is not operated



The next description includes the action for each section step by step.

For the function of each circuit breaker (Refer to the 01251-100-S07-E10-0003 Outdoor Panel Single Line and Wiring Diagram)



The operation is the following:



**EGPC – THE EGYPTIAN GENERAL
PETROLEUM CORPORATION.**



Check the voltage supply on the 3 P+N on the Voltmeter PV1 by the voltmeter switch SV 1 close the fuse switch QU1.1
Check by the Lamp Test SB1 the correct function of the signal lamp Close the breaker QF 1.1 and supply the aux. transformer for signal lamp.
Close the Main Circuit breaker QF1
By the signal lamp HL1.1/2.1/3.1 check the status of main circuit breaker
Closed the breaker QF 0 for pilot circuit emergency light
Close the Circuit Breaker QF 3 QF 4 QF 5 step by step to supply all circuit convenience outlet sockets and check the output voltage by voltmeter. For Each circuit breaker are provided the following signal lamp: -Red Lamp Circuit breaker close -Green Lamp Circuit breaker open -Yellow Lamp Fault
Close the Circuit Breaker QF6 to QF13 step by step to supply all circuit and check the output voltage by voltmeter. For Each circuit breaker are provided the following signal lamp: -Red Lamp Circuit breaker close -Green Lamp Circuit breaker open -Yellow Lamp Fault

	<u>EGPC – THE EGYPTIAN GENERAL PETROLEUM CORPORATION.</u>	 <small>COSTRUZIONI ELETTRICHE CEAR s.p.a.</small>
---	--	--

CRUDE OIL TANK FARM 1251-100

EPM MODULE 030-EPM1

UPDP Distribution Panel

SAT

Commissioning and Site Integration Test Procedures

1	16/11/2020	Approval	BP	LS	GA		
0	30/10/2020	Approval	BP	LS	GA		
Rev.	Date	Issued For	Prepared	Checked	Approved	Approved	Approved
<u>Notes:</u>			EGPC – THE EGYPTIAN GENERAL PETROLEUM CO.				
			Contract Number: 1251-100-510-16				
			Enppi Ref.: 01251-100-S07-P06-0009 R.1				
					Language: E		Total Pages: 12
This document is the property of Enppi It must not be stored reproduced or disclosed to others without written authorization from the COMPANY							

	<p align="center"><u>EGPC – THE EGYPTIAN GENERAL PETROLEUM CORPORATION.</u></p>	
---	--	---

INDEX

INTRODUCTION SAT PROCEDURE	3
Aim of the document.....	3
1.1 Personnel involved in the SAT.....	3
1.2 DOCUMENTATION.....	4
2. TESTING STRATEGY.....	4
3.1 Documentation check.....	5
3.2 INSTALLATION CHECK.....	6
3.3 POWER SUPPLY CHECK.....	8
4. FUNCTIONAL TESTING.....	9
4.1 Electrical equipment.....	9
5 COMMISSIONING AND START-UP PROCEDURES UPS PANEL	10
5.1 Preliminary operation.....	10
5.1.1. Mechanical assembling.....	10
5.1.2 Electrical / Instrument connecting.....	10
Field test check.....	10
Check and Test without voltage supply.....	10
5.1.3 Check and Test with Voltage supply.....	11
5.1.4 Test the circuit one by one and not at the same time in order to check correctly.....	11

	<p align="center"><u>EGPC – THE EGYPTIAN GENERAL PETROLEUM CORPORATION.</u></p>	
---	--	---

INTRODUCTION SAT PROCEDURE

Aim of the document.

This document is the FAT, Functional & Performance Test for the UPS Distribution Panel of the EPM electrical Power Module

The document is the acceptance protocol concerning the characteristics of the supplied UPS Panel

Definition:

Supplier: CEAR

Customer: ENPPI

Client: PPC

1.1 Personnel involved in the SAT

The table below shows the people who participate at the activity of the SAT (Commissioning and Site Integration Test Procedures): the present people must sign next to their name.

CEAR and ENPPI can use an external Inspector / Agency or third-party Body.

Name and Surname	Company/Position	Signature	Date
Ahmed abdenn	ENPPI		17/7/2021
M. Ibrahim	PPC		17/7/2021
CORT CORT-ur FABIS	CEAR		17-07-21
	CEAR		

1.2 DOCUMENTATION

Following a list of the relevant documents used to perform the FAT (please fill the table with the last revision number of the documents used).

Document No.	Rev.	Description
01251-100-S07-B01-0001	R.7	General Arrangement
01251-100-S07-E02-0004	R.4	UPS Panel Overall Dimensions Panel Layout
01251-100-S07-E10-0004	R.4	UPS Panel Single & Wiring diagram.
01251-100-S07-K11-0009	R.2	EPM Filled UPS Distribution Panel Data Sheet
01251-100-S07-E05-0002	R.5	EPM Internal Cable schedule

2. TESTING STRATEGY

The testing strategy includes the following two phases.

The **Installation** testing phase is developed to test the:

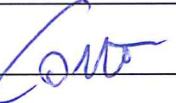
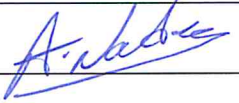
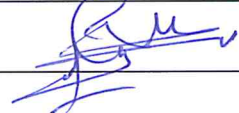
- Documentation;
- Mechanical installation ;
- Electrical installation.

The **Functioning** testing phase is developed to test the functioning of the:

- Electrical equipment

3. INSTALLATION TESTING.

3.1 Documentation check.

3.1	Documentation check.			
	Aim	Check the presence of the project documentation.		
	Pre-requisites	N.A.		
	Test description	Check the presence and the state of the documentation listed on chapter 1.2 of the FAT procedure.		
	Acceptance criteria	All the documentation listed on chapter 1.2 of the FAT procedure have to be present.		
	Notes			
	Executed	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Result	<input checked="" type="checkbox"/> Positive <input type="checkbox"/> Negative
	Date	Supplier	Customer	Client
17-07-21				

3.2 INSTALLATION CHECK

3.2.1	Earthing connections.			
	Aim	Check the earthing connections (wiring and tightening).		
	Pre-requisites	N.A.		
	Test description	Visual inspection and tightening test (with a screw driver or a wrench).		
	Acceptance criteria	The earthing connections must be in compliance with the following documents: 01251-100-S07-E10-0004 UPS Single & Wiring Diagram 01251-100-S07-E99-0009 Earthing System Internal External Layout		
	Instrument	Screw driver, Wrench.		
	Notes			
	Executed	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Result	<input checked="" type="checkbox"/> Positive <input type="checkbox"/> Negative
	Date	Supplier	Customer	Client
17-07-20	<i>[Signature]</i>	<i>[Signature]</i>	<i>[Signature]</i>	

3.2.2	UPS Cleanliness of the equipment			
	Aim	Check the cleanliness of the equipment.		
	Pre-requisites	N.A.		
	Test description	Visual inspection.		
	Acceptance criteria			
	Instrument	N.A.		
	Notes			
	Executed	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Result	<input checked="" type="checkbox"/> Positive <input type="checkbox"/> Negative
	Date	Supplier	Customer	Client
17-07-20	<i>[Signature]</i>	<i>[Signature]</i>	<i>[Signature]</i>	



**EGPC – THE EGYPTIAN GENERAL
PETROLEUM CORPORATION.**



3.2.3	Mechanical and electrical interlocks, door and isolating handle interlocks, key interlocks, etc..			
	Aim	Check the functioning of the mechanical and electrical interlocks, door and isolating handle interlocks, key interlocks, etc..		
	Pre-requisites	N.A.		
	Test description	Functional test of all the mechanical and electrical interlocks.		
	Acceptance criteria	All the mechanical and electrical interlocks described on the following documents must be operative: The UPS arrangement must be in compliance with the following documents: 01251-100-S07-E10-0004 UPS Single & Wiring Diagram 01251-100-S07-E02-0004 UPS Overall Dimension Panel Layout		
	Instrument	N.A.		
	Notes			
	Executed	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Result	<input checked="" type="checkbox"/> Positive <input type="checkbox"/> Negative
	Date	Supplier	Customer	Client
17-07-21				

	EGPC – THE EGYPTIAN GENERAL PETROLEUM CORPORATION.	 <small>COSTRUZIONI ELETTROTECNICHE CEAR s.r.l.</small>
---	---	---

3.3 POWER SUPPLY CHECK

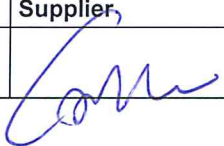
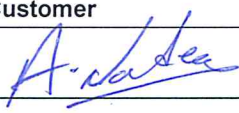
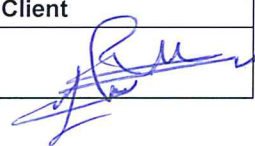
3.3.1	Main circuits Power supply			
	Aim	Check the main circuits power supply.		
	Pre-requisites	N.A.		
	Test description	Check the presence and the value of the main power supply voltage.		
	Acceptance criteria	The main circuits power supply voltage should be 400V 3P+N 50Hz.		
	Instrument	Type: <u>HT 17507</u> Mod.: <u>HT 8200</u> S/N: <u>98600599</u> Test Certificate: <u>7564</u>		
	Measured voltage	Value	<u>400V</u>	Frequency <u>50Hz</u>
	Notes			
	Executed	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Result	<input checked="" type="checkbox"/> Positive <input type="checkbox"/> Negative
	Date	Supplier	Customer	Client
	<u>17-07-21</u>	<u>Com</u>	<u>A. Abdel</u>	<u>RM</u>

3.3.2	Auxiliary circuits Power supply			
	Aim	Check the auxiliary circuits power supply.		
	Pre-requisites	N.A.		
	Test description	Check the presence and the value of the auxiliary power supply voltage.		
	Acceptance criteria	The auxiliary circuits power supply voltage should be 230V 1P+N 50Hz.		
	Instrument	Type: <u>HT 17507</u> Mod.: <u>HT 8200</u> S/N: <u>98600599</u> Test Certificate: <u>7564</u>		
	Measured voltage	Value	<u>230V</u>	Frequency <u>50Hz</u>
	Notes			
	Executed	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Result	<input checked="" type="checkbox"/> Positive <input type="checkbox"/> Negative
	Date	Supplier	Customer	Client
	<u>17-07-21</u>	<u>Com</u>	<u>A. Abdel</u>	<u>RM</u>

	EGPC – THE EGYPTIAN GENERAL PETROLEUM CORPORATION.	 <small>COSTRUZIONI ELETTRICHE CEAR s.r.l.</small>
---	---	--

4. FUNCTIONAL TESTING.

4.1 Electrical equipment.

4.1.	UPS operating conditions.			
	Aim	Check the functioning of the UPS		
	Pre-requisites	N.A.		
	Test description	Check the circuit breaker, signal lamps and verify the output distribution		
	Acceptance criteria	The electrical functioning of the UPS must be in compliance with the following document: 01251-100-S07-E10-0004 UPS Single & Wiring Diagram		
	Notes			
	Executed	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Result	<input checked="" type="checkbox"/> Positive <input type="checkbox"/> Negative
	Date	Supplier	Customer	Client
17-07-21				

5 COMMISSIONING AND START-UP PROCEDURES UPS PANEL

5.1 Preliminary operation

The UPS panel provide to fed the auxiliary and command circuit of the LVSWG MCC panel the power supply of the F&G panel, the supply for external shut down valve and the Tank Radar Gauging.
The UPS is powered from the Enppi UPS Substation so as to guarantee continuity of power supply even in the event of a power loss.

Before starting-up the electrical and instrumentation commissioning of UPS Panel all connection with the other panel will be terminated and all the followings point should be checked and confirmed:
The circuit breakers of the others panel connected to the UPS panel must be in open position.

Each circuit is controlled by the relevant circuit breaker.

5.1.1. Mechanical assembling

<input checked="" type="checkbox"/>	Check equipment's alignment
<input checked="" type="checkbox"/>	Check all bolts fixing

5.1.2 Electrical / Instrument connecting

<input checked="" type="checkbox"/>	Check cabling connection
<input checked="" type="checkbox"/>	Check insulated test of cabling system before energizing on the outgoing

After confirmation, the UPS Panel is ready for electrical test without voltage supply
Field test check
Check and Test without voltage supply

Before energising the system, all the followings point should be checked and confirmed:

<input checked="" type="checkbox"/>	Check earthing system connection from the external grounding system to the Indoor Power Distribution Panel ground bar (PE bar).
<input checked="" type="checkbox"/>	Check and/or set all electrical protection as per the wiring diagram

After confirmation, the UPS Panel is ready for electrical and instrument test with power supply.

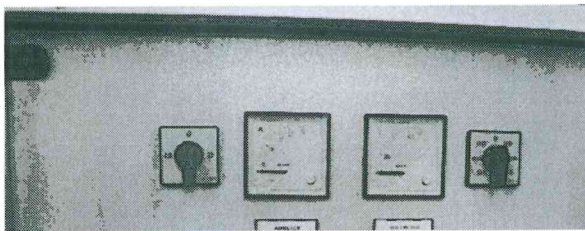
5.1.3 Check and Test with Voltage supply

Before energizing the indoor panel, all breaker must be open.

Require to Enppi supervisor to close the power circuit breaker in the UPS Substation and verify the voltage value.

The verification and the connection of the power supply cable is in charge to Enppi

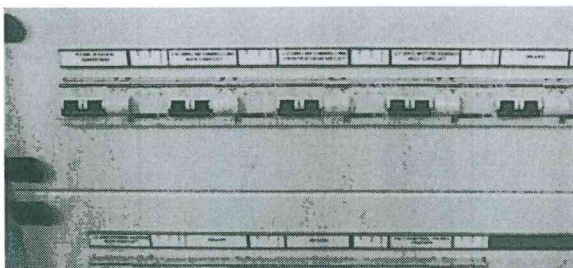
The UPS panel is provided with the following measuring control (see picture):



- Main circuit breaker
- Ammeter and relevant ammeter switch
- Voltmeter and relevant voltmeter switch

5.1.4 Test the circuit one by one and not at the same time in order to check correctly

Each lighting circuit is controlled by the relevant switch breaker, each breaker is equipped with 3 signal lamps green "OFF", red "ON", yellow "FAULT".



The next description includes the action for each section step by step.
For the function of each circuit breaker (Refer to the 01251-100-S07-E10-0003 Outdoor Panel Single Line and Wiring Diagram)




**EGPC – THE EGYPTIAN GENERAL
PETROLEUM CORPORATION.**



The operation is the following:

Check the voltage supply on the 3 P+N on the Voltmeter PV1 by the voltmeter switch SV 1 close the fuse switch QU1.1
Check by the Lamp Test SB1 the correct function of the signal lamp Close the breaker QF 1.1 and supply the aux. transformer for signal lamp.
Close the Main Circuit breaker QF1
By the signal lamp HL1.1/2.1/3.1 check the status of main circuit breaker
Close the Circuit Breaker QF 2 to QF 12 step by step to supply all circuit and check the output voltage by voltmeter. For each circuit breaker are provided the following signal lamp: -Red Lamp Circuit breaker close -Green Lamp Circuit breaker open -Yellow Lamp Fault

Enppi	<u>EGPC – THE EGYPTIAN GENERAL PETROLEUM CORPORATION.</u>	 <small>EGPC – THE EGYPTIAN GENERAL PETROLEUM CO. S.A.E.</small>
--------------	--	--

CRUDE OIL TANK FARM 1251-100

EPM MODULE 030-EPM1

SAT

Commissioning and Site Integration Test Procedures

1	16/11/2020	Approval	BP	LS	GA		
0	30/10/2020	Approval	BP	LS	GA		
Rev.	Date	Issued For	Prepared	Checked	Approved	Approved	Approved
<u>Notes:</u>			EGPC – THE EGYPTIAN GENERAL PETROLEUM CO.				
			Contract Number: 1251-100-500-16				
			Enppi Ref.: 01251-100-S07-P06-0001 R 1				
					Language E		Total Pages: 19
This document is the property of Enppi It must not be stored, reproduced or disclosed to others without written authorization from the COMPANY							



**EGPC – THE EGYPTIAN GENERAL
PETROLEUM CORPORATION.**



INDEX

INTRODUCTION SAT PROCEDURE	3
Aim of the document	3
TESTING STRATEGY	3
Safety precaution	3
Personnel involved in the SAT	4
Section 1: EPM DESIGN & FABRICATION	4
DESCRIPTION OF THE TESTS	4
1.1 Documentation	5
1.2 Visual Check	7
Section 2: EPM ELECTRICAL INSTALLATION	8
DESCRIPTION OF THE TESTS	8
Personnel involved in the SAT	8
2.1 Documentation.	9
2.2 Internal and External Lighting system	10
Section 3: EPM LIGHTNING SYSTEM	13
DESCRIPTION OF THE TESTS	13
Personnel involved in the SAT	13
3.1 Documentation.	14
3.2 Lightning System	15
Section 4: EPM MCT Multicable Transition System	17
DESCRIPTION OF THE TESTS	17
Personnel involved in the SAT	17
4.1 Documentation.	18
4.2 MCT FRAME	19



**EGPC – THE EGYPTIAN GENERAL
PETROLEUM CORPORATION.**



INTRODUCTION SAT PROCEDURE

Aim of the document.

This document is the SAT Commissioning and Site Integration Test Procedure for the EPM Electrical Power Module

The document is the acceptance protocol concerning the characteristics of the supplied EPM

Definition:

Supplier: CEAR

Customer: ENPPI

Client: PPC

TESTING STRATEGY

The testing strategy includes the following two phases.

The Installation testing phase is developed to test the:

- Documentation;
- Mechanical installation;
- Electrical installation.

•



The Functioning testing phase is developed to test the functioning of the:

- Mechanical equipment's
- Electrical equipment's

Safety precaution

Before the beginning of the test brief safety induction will be done to all the people attending the test.

We will describe the company safety rules and the rules to be followed while attending the test.

	EGPC – THE EGYPTIAN GENERAL PETROLEUM CORPORATION.	
---	---	---

Personnel involved in the SAT

The table below shows the people who participate at the activity of the SAT (Commissioning and Site Integration Test): the present people must sign next to their name.

CEAR and ENPPI can use an external Inspector / Agency or third-party Body.

Name and Surname	Company/Position	Signature	Date
<i>Ahmed eladen</i>	ENPPI	<i>A. eladen</i>	18/7/2021
<i>M. Ibrahim</i>	PPC	<i>M. Ibrahim</i>	17/7/2021
<i>Com. Com. Com. PABlo</i>	CEAR	<i>Com. Com. Com. PABlo</i>	17-7-21
	CEAR		

Section 1: EPM DESIGN & FABRICATION

DESCRIPTION OF THE TESTS

Visual test

Visual test will be performed to verify the good workmanship, the absence of sharpen edge, the absence of damages on the welds.

Dimensional Check

Dimensional Check will be performed to check if the dimensions of the component are in tolerances as per manufacturing drawings.

Surface Painting & Coating Check

Surface Painting check will be performed to check the painting coating and final internal/external color.

Identification and Marking Check

Identification and Marking Check will be performed to verify the correct nameplate of the EPM Module

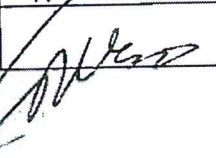
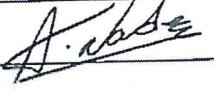

	<p align="center"><u>EGPC – THE EGYPTIAN GENERAL PETROLEUM CORPORATION.</u></p>	
---	--	---



1.1 Documentation

Following a list of the relevant documents used to perform the SAT (please fill the table with the last revision number of the documents used).

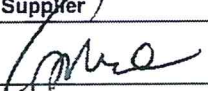
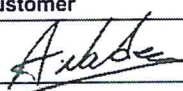

Document No.	Rev.	Description
01251-100-S07-B01-0001	R.7	EPM General Arrangements
01251-100-S07-B04-0001	R.5	EPM Foundation Drawings
01251-100-S07-B05-0001	R.2	EPM Doors drawing and fire rating
01251-100-S07-B05-0002	R.1	EPM False floor and fire rating
01251-100-S07-B05-0003	R.1	EPM Roof Accessibility
01251-100-S07-B05-0005	R.1	EPM Sandwich Walls Panel-Internal Partition
01251-100-S07-D01-0001	R.3	EPM Detail Design Fabrication Drawings
01251-100-S07-P05-0001	R.4	Surface Preparation Painting & Coating Procedures
01251-100-S07-D04-0001	R.2	EPM Nameplate format drawing
01251-100-S07-D99-0003	R.2	Transformer Dragging System Layout
01251-100-S07-D99-0001	R.2	EPM Lifting Pad Eyes Layout
01251-100-S07-D99-0002	R.2	EPM Centre of gravity Location Layout

	<p align="center">EGPC – THE EGYPTIAN GENERAL PETROLEUM CORPORATION.</p>	
---	---	---

<p align="center">1.1</p>	<p align="center">Documentation check</p>			
	Aim	Check the presence of the project documentation.		
	Pre-requisites	N.A.		
	Test description	Check the presence and the state of the documentation listed on chapter 1.2		
	Acceptance criteria	All the documentation listed on chapter 1.1 Section 1 of the FAT procedure have to be present.		
	Notes			
	Executed	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Result	<input checked="" type="checkbox"/> Positive <input type="checkbox"/> Negative
Date	Supplier	Customer	Client	
12-7-21				

	EGPC – THE EGYPTIAN GENERAL PETROLEUM CORPORATION.	
---	---	---

1.2 Visual Check

1.2	Visual Check			
	Aim	Visual check of the good construction of the EPM		
	Pre-requisites	N.A.		
	Test description	Visual test will be performed to verify the good workmanship, the absence of sharpen edge, the absence of damages on the welds.		
	Acceptance criteria	Visual test and relevant photo		
	Notes			
	Executed	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Result	<input checked="" type="checkbox"/> Positive <input type="checkbox"/> Negative
	Date	Supplier	Customer	Client
	17-7-21			



**EGPC – THE EGYPTIAN GENERAL
PETROLEUM CORPORATION.**



Section 2: EPM ELECTRICAL INSTALLATION

DESCRIPTION OF THE TESTS

Visual test

General visual test will be performed to verify the good workmanship

Internal and External Lighting System

Visual test and functional test will be performed as per the relevant documentation

Electrical Safety Check Lighting System

Safety check insulation and dielectric test

Internal raceway and EPM wiring

Visual inspection of the raceway and internal EPM wiring



Identification and Marking Check

Personnel involved in the SAT

The table below shows the people who participate at the activity of the SAT (Commissioning and Site Integration Test): the present people must sign next to their name.

CEAR and ENPPI can use an external Inspector / Agency or third-party Body.

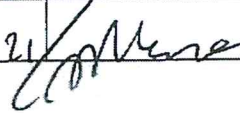
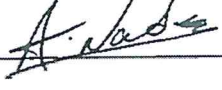
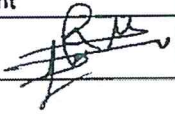
Name and Surname	Company/Position	Signature	Date
Ahmed Abdelhakem	ENPPI		17/7/2021
M. Ibrahim	PPC		17/7/2021
Cott Cottew P4-B10	CEAR		17-07-21
	CEAR		

	EGPC – THE EGYPTIAN GENERAL PETROLEUM CORPORATION.	
---	---	---

2.1 Documentation.

Following a list of the relevant documents used to perform the SAT (please fill the table with the last revision number of the documents used).

Document No.	Rev.	Description
01251-100-S07-E99-0008	R.3	Lighting and Small Power System Electrical Layout
01251-100-S07-E99-0011	R.4	Cable Routing Power & Lighting Layout
01251-100-S07-C99-0001	R.3	Lighting Lux Level Calculation
01251-100-S07-K09-0004	R.4	EPM Ancillaries Supplier Data Sheet

Documentation check				
2.1	Aim	Check the presence of the project documentation.		
	Pre-requisites	N.A.		
	Test description	Check the presence and the state of the documentation listed on chapter 2.1.		
	Acceptance criteria	All the documentation listed on chapter 2.1 Section 2 of the SAT procedure have to be present.		
	Notes			
	Executed	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Result	<input checked="" type="checkbox"/> Positive <input type="checkbox"/> Negative
Date	Supplier	Customer	Client	
	17-7-21 / 			



10 of 19



**EGPC – THE EGYPTIAN GENERAL
PETROLEUM CORPORATION.**





Internal and External Lighting Fixtures Functional Test	
Aim	Verify the proper operation of the internal and external EPM lighting system.
Pre-requisites	Energize the indoor and outdoor distribution boards with 400 V 3P+N
Test description	The test must be in compliance with the following documents: 01251-100-S07-E99-0008 Lighting and Small Power System Layout 01251-100-S07-K09-0004 Ancillaries supplier data sheet 01251-100-S07-E10-0002 Indoor Panel Single Line diagram 01251-100-S07-E10-0003 Outdoor Panel Single Line Diagram 01251-100-S07-D99-0011 EPM Cable routing & Lighting Layout 01251-100-S07-C99-0001 Lighting Lux level Calculation
Acceptance Criteria	Single Test of the various lighting circuit as defined in the electrical documentation. Check the correct function of the emergency light fixtures external and internal Check the correct function of the twilight switch and the emergency line circuit
Notes	
Executed	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Date	17-07-20
Supplier	Amr
Customer	Abdel
Client	Ram



**EGPC - THE EGYPTIAN GENERAL
PETROLEUM CORPORATION.**



Small Power system Functional test			
Aim	Verify the proper operation of the internal and external EPM receptacles		
Pre-requisites	Supply the indoor and outdoor distribution with 400 V 3P+N		
Test description	The test must be in compliance with the following documents: 01251-100-S07-E99-0008 Lighting and Small Power System Layout 01251-100-S07-K09-0004 Ancillaries supplier data sheet 01251-100-S07-E10-0002 Indoor Panel Single Line diagram 01251-100-S07-E10-0003 Outdoor Panel Single Line Diagram 01251-100-S07-D99-0011 EPM Cable routing & Lighting Layout		
Acceptance Criteria	Single Test of the small power system circuit as defined in the electrical documentation. Check the correct function of the small power system external and internal		
2.2.3	Notes		
Executed	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Result	<input checked="" type="checkbox"/> Positive <input type="checkbox"/> Negative
Date	Supplier	Customer	Client
17-07-2014	<i>[Signature]</i>	<i>[Signature]</i>	<i>[Signature]</i>

	<p align="center">EGPC – THE EGYPTIAN GENERAL PETROLEUM CORPORATION.</p>	
---	---	---

Section 3: EPM LIGHTNING SYSTEM

DESCRIPTION OF THE TESTS

Visual test

General visual test will be performed to verify the good workmanship

Lightning System



Visual test and continuity check of the earthing system will be performed as per the relevant documentation

Personnel involved in the SAT

The table below shows the people who participate at the activity of the SAT (Commissioning and Site Integration Test) the present people must sign next to their name.

CEAR and ENPPI can use an external Inspector / Agency or third-party Body.

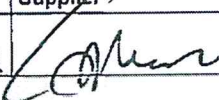
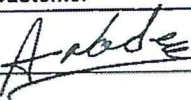
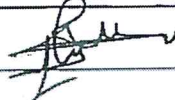
Name and Surname	Company/Position	Signature	Date
Ahmed Nadeem	ENPPI		17/7/2021
M. Dostin	PPC		17/7/2021
Coni Conin Pr B.10	CEAR		17-07-21
	CEAR		

	EGPC – THE EGYPTIAN GENERAL PETROLEUM CORPORATION.	
---	---	---

3.1 Documentation.

Following a list of the relevant documents used to perform the SAT (please fill the table with the last revision number of the documents used).

Document No.	Rev.	Description
01251-100-S07-B01-0001	R.7	General Arrangement
01251-100-S07-E99-0010	R.4	Lightning System General Layout
01251-100-S07-C99-0008	R.3	Lightning Protection Calculation

3.1.1	Documentation check			
	Aim	Check the presence of the project documentation.		
	Pre-requisites	N.A.		
	Test description	Check the presence and the state of the documentation listed on chapter 3.1		
	Acceptance criteria	All the documentation listed on chapter 3.1 Section 3 of the SAT procedure have to be present.		
	Notes			
	Executed	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Result	<input checked="" type="checkbox"/> Positive <input type="checkbox"/> Negative
	Date	Supplier	Customer	Client
	17/07/21			



**EGPC – THE EGYPTIAN GENERAL
PETROLEUM CORPORATION.**



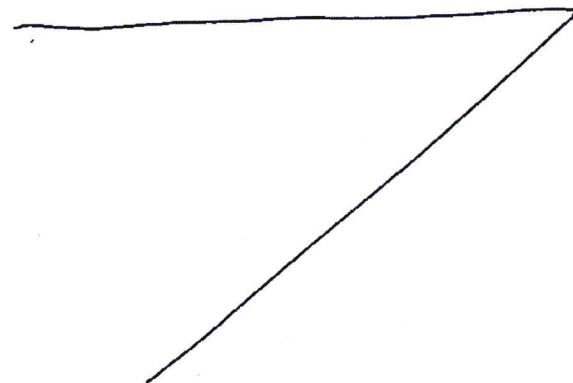
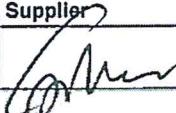
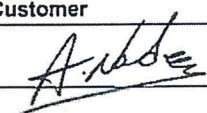
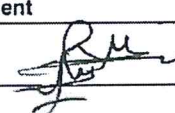
3.2 Lightning System

Lightning system layout installation			
Aim	Verify the installation of the EPM lightning system		
Pre-requisites	N.A.		
Test description	The installation and the material must be in compliance with the following document: 01251-100-S07-E99-0010 Lightning System Layout		
Acceptance Criteria	Visual check and quantity check of the equipment		
3.2.1	Notes		
Executed	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Result	<input checked="" type="checkbox"/> Positive <input type="checkbox"/> Negative
Date	Supplier	Customer	Client
17-07-21	<i>[Signature]</i>	<i>[Signature]</i>	<i>[Signature]</i>



EGPC – THE EGYPTIAN GENERAL
PETROLEUM CORPORATION.



Lightning system continuity check			
Aim	Verify the continuity of the EPM lightning system		
Pre-requisites	N.A.		
Test description	The installation and the material must be in compliance with the following document: 01251-100-S07-E99-0010 Lightning System Layout		
Acceptance Criteria	The resistance measured shall be at least $< \Omega$.		
Instrument	Type: <u>REGG 12</u> Mod: <u>MT-620-2</u> S/N: <u>11</u> Test Certificate: <u>6</u>		
3.2.2	Notes <u>R = 1 Ω</u> 		
Executed	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Result	<input checked="" type="checkbox"/> Positive <input type="checkbox"/> Negative
Date	Supplier	Customer	Client
17-7-21			

	<p align="center">EGPC – THE EGYPTIAN GENERAL PETROLEUM CORPORATION.</p>	
---	---	---

Section 4: EPM MCT Multicable Transition System

DESCRIPTION OF THE TESTS

Visual test

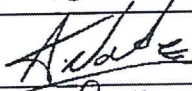

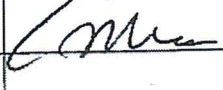
General visual test will be performed to verify the good workmanship

Identification and Marking Check

Personnel involved in the SAT.

The table below shows the people who participate at the activity of the SAT ((Commissioning and Site Integration Test) the present people must sign next to their name.

CEAR and ENPPI can use an external Inspector / Agency or third-party Body.

Name and Surname	Company/Position	Signature	Date
Ahmed Khader	ENPPI		17/7/2021
M. Ibrahim	PPC		17/7/2021
Com. Com. W. FA B12	CEAR		17-07-21
	CEAR		



**EGPC – THE EGYPTIAN GENERAL
PETROLEUM CORPORATION.**





4.1 Documentation.


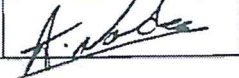

Following a list of the relevant documents used to perform the sAT (please fill the table with the last revision number of the documents used).

Document No.	Rev.	Description
01251-100-S07-B01-0001	R.7	General Arrangement
01251-100-S07-E99-0005	R.4	MCT Frame Layout and schedule

Documentation check			
Aim	Check the presence of the project documentation.		
Pre-requisites	N.A.		
Test description	Check the presence and the state of the documentation listed on chapter 4.1.		
Acceptance criteria	All the documentation listed on chapter 4.1 Section 4 of the SAT procedure have to be present.		
4.1.1	Notes		
Executed	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Result	<input checked="" type="checkbox"/> Positive <input type="checkbox"/> Negative
Date	Supplier	Customer	Client
17-07-21	<i>[Signature]</i>	<i>[Signature]</i>	<i>[Signature]</i>

	<p align="center">EGPC – THE EGYPTIAN GENERAL PETROLEUM CORPORATION.</p>	
---	---	---

4.2 MCT FRAME

4.2	MCT Frame layout installation			
	Aim	Verify that the installation of the MCT layout		
	Pre-requisites	N.A.		
	Test description	The installation and the material must be in compliance with the following document: 01251-100-S07-E99-0005 MCT Frame Layout Arrangement		
	Acceptance Criteria	Visual check and quantity check of the equipment		
	Notes	<p align="center">MCT SHALL BE INSTALLED OFTON CABLE COARNING (Laying) COMPLETION</p>		
	Executed	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Result	<input type="checkbox"/> Positive <input type="checkbox"/> Negative
	Date	Supplier	Customer	Client
17-07-21				

	EGPC – THE EGYPTIAN GENERAL PETROLEUM CORPORATION.	
---	---	---

**CRUDE OIL TANK FARM
1251-100**

EPM MODULE 030-EPM1

LVSWG MCC

SAT

**Commissioning and Site Integration Test
Procedures**

1	16/11/2020	Approval	BP	LS	GA		
0	20/10/2020	Approval	BP	LS	GA		
Rev.	Date	Issued For	Prepared	Checked	Approved	Approved	Approved
<u>Notes:</u>			EGPC – THE EGYPTIAN GENERAL PETROLEUM CO.				
			Contract Number: 1251-100-16-7				
			Enppi Ref.: 01251-100-S07-P06-0002 R.1				
			Language E			Total Pages 30	
This document is the property of Enppi It must not be stored, reproduced or disclosed to others without written authorization from the COMPANY							



**EGPC – THE EGYPTIAN GENERAL
PETROLEUM CORPORATION.**



INDEX

INTRODUCTION SAT PROCEDURE	3
Aim of the document	3
TESTING STRATEGY	3
Safety precaution	3
Personnel involved in the SAT	4
DESCRIPTION OF THE TESTS	4
1.1. Testing Equipment to be used	5
1.2. Documentation	6
1.2.1. Documentation check	7
2. GENERAL CONSTRUCTION CHECK	8
3. EQUIPMENT CHECK	11
4. ELECTRICAL SAFETY CHECK	12
5. POWER SUPPLY CHECK	15
6. FUNCTIONAL TESTING	18
6.1. Electrical equipment	18
7. COMMISSIONING and START-UP PROCEDURES	23
7.1. Preliminary operations	23
7.1.1 Mechanical assembling check list	23
7.1.2 Electrical connection check list	23
7.1.3 Checks without power supply	23
7.2. COMMISSIONING	24
7.3. INCOMING LINE SWITCH FUNCTION (column 1)	25
7.3.1. NORMAL OPERATION	25
7.3.2. POWER SUPPLY LOSS	26
7.3.3. POWER RESTORATION	26
7.4. LVSWG MCC Columns	27
7.4.1. Drawer feeder commissioning/operating (column 2)	27
7.4.2. DOL drawer commissioning/operating (column 3 and 4)	28

	<p align="center"><u>EGPC – THE EGYPTIAN GENERAL PETROLEUM CORPORATION.</u></p>	
---	--	---

INTRODUCTION SAT PROCEDURE

Aim of the document.

This document is the SAT Commissioning and Site Integration Test Procedure for the EPM Electrical Power Module

The document is the acceptance protocol concerning the characteristics of the supplied EPM

Definition:

Supplier: CEAR

Customer: ENPPI

Client: PPC

TESTING STRATEGY

The testing strategy includes the following two phases.

The Installation testing phase is developed to test the:

- Documentation;
- Mechanical installation;
- Electrical installation.



The Functioning testing phase is developed to test the functioning of the:

- Mechanical equipment's
- Electrical equipment's

Safety precaution

Before the beginning of the test brief safety induction will be done to all the people attending the test.

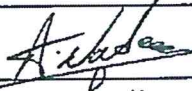
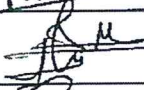
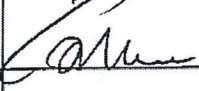
We will describe the company safety rules and the rules to be followed while attending the test.

	EGPC – THE EGYPTIAN GENERAL PETROLEUM CORPORATION.	
---	---	---

Personnel involved in the SAT.

The table below shows the people who participate at the activity of the SAT (Commissioning and Site Integration Test Procedures): the present people must sign next to their name.

CEAR can use an external Inspector / Agency or third-party Body.

Name and Surname	Company/Position	Signature	Date
Ahmed Kader	ENPPI		17/7/2021
M. Ibrahim	PPC		17/7/2021
COMP. COTTIN FABIO	CEAR		17-07-21
	CEAR		



DESCRIPTION OF THE TESTS

Visual test

General visual test will be performed to verify the good workmanship and correct installations

This document is the Site Acceptance Test for the Motor Control Center.



The document is the acceptance protocol concerning the hardware characteristics of the supplied MCC.

	<p align="center"><u>EGPC – THE EGYPTIAN GENERAL PETROLEUM CORPORATION.</u></p>	
---	--	---

1.1. Testing Equipment to be used

Following a list of the instruments shall be available during the SAT by ENPPI:

Instrument	Model	Serial Number	Calibration expiry date
Electrical safety Tester for insulation and Dielectric tests	HOTHEL HJ2270	SN005	06-10-23
High voltage insulation Tester up to 1 kV DC (megger)	MUGGELIN HIT420-2	/	/
Torque wrench	USA 6	A3030290135	06-08-22
Multimeter	PIT 1700A HIT1100	98600509	01-02-24
Ammeter Clamp	HIT 1700A HT0020	19073001	08-02-24

	<p align="center"><u>EGPC – THE EGYPTIAN GENERAL PETROLEUM CORPORATION.</u></p>	
---	--	---

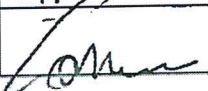
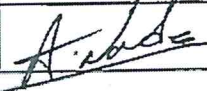
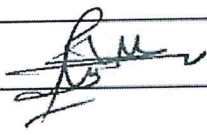
1.2. Documentation.



Following a list of the relevant documents used to perform the SAT (please fill the table with the last revision number of the documents used).

Document No.	Rev.	Description
01251-100-S07-B01-0001	R.7	General Arrangement
01251-100-S07-E02-0001	R.4	LVSWG Overall Dimensions Panel Layout
01251-100-S07-E10-0001	R.5	LVSWG Single line diagram.
01251-100-S07-E99-0006	R.4	LV Bus Duct General Arrangement
01251-100-S07-K09-0003	R.4	EPM Main Equipment Supplier Data Sheet
01251-100-S07-E05-0002	R.5	EPM Internal Cable schedule

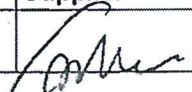
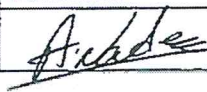
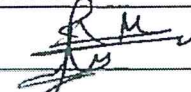
	EGPC – THE EGYPTIAN GENERAL PETROLEUM CORPORATION.	
---	---	---

1.2.1. Documentation check

1.2.1	Documentation check			
	Aim	Check the presence of the project documentation.		
	Pre-requisites	N.A.		
	Test description	Check the presence and the state of the documentation listed on chapter 4.1 of the SAT procedure.		
	Acceptance criteria	All the documentation listed on chapter 1.1 of the SAT procedure have to be present.		
	Notes			
	Executed	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Result	<input checked="" type="checkbox"/> Positive <input type="checkbox"/> Negative
	Date	Supplier	Customer	Client
17-07-21				

	EGPC – THE EGYPTIAN GENERAL PETROLEUM CORPORATION.	
---	---	---

2. GENERAL CONSTRUCTION CHECK



2.1.1	Terminal block connections.			
	Aim	Check the terminal block connections (wiring and tightening).		
	Pre-requisites	N.A.		
	Test description	Spot visual inspection and tightening test (with a screw driver).		
	Acceptance criteria	The terminal block connections must be in compliance with the following documents: 01251-100-S07-E10-0001 LVSWG Single Line Diagram		
	Instrument	Screw driver.		
	Notes			
	Executed	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Result	<input checked="" type="checkbox"/> Positive <input type="checkbox"/> Negative
	Date	Supplier	Customer	Client
17-01-21				

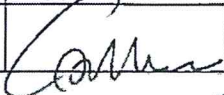
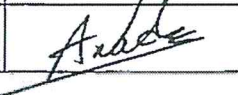
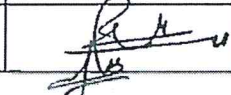


**EGPC - THE EGYPTIAN GENERAL
PETROLEUM CORPORATION.**



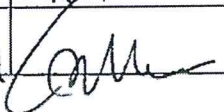
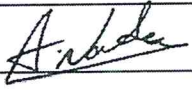
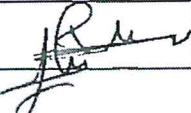
LVSWG Cleanliness of the equipment			
Aim	Check the cleanliness of the equipment.		
Pre-requisites	Switchgear ready to be energized.		
Test description	Visual inspection.		
Acceptance criteria	The LV PMCC Switchgear is clean, dust has been removed and no tools are present in it.		
Instrument	N.A.		
2.1.2	Notes	<i>* Further Cleaning inside the MCC is required</i>	
Executed	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Result	<input type="checkbox"/> Positive <input type="checkbox"/> Negative
Date	Supplier	Customer	Client
170721	<i>[Signature]</i>	<i>[Signature]</i>	<i>[Signature]</i>

	<p align="center">EGPC – THE EGYPTIAN GENERAL PETROLEUM CORPORATION.</p>	
---	---	---

2.1.3	Mechanical and electrical interlocks			
	Aim	Check the functioning of the mechanical and electrical interlocks, door handle interlocks, key interlocks)		
	Pre-requisites	N.A.		
	Test description	Functional test of all the mechanical and electrical interlocks.		
	Acceptance criteria	<p>All the mechanical and electrical interlocks described on the following documents must be operative:</p> <p>The LVSWG arrangement must be in compliance with the following documents:</p> <p>01251-100-S07-E02-0001 LVSWG Overall Dimension Panel Layout.</p> <p>01251-100-S07-E10-0001 LVSWG Single line Diagram</p>		
	Instrument	Operating handles, keys.		
	Notes			
	Executed	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Result	<input checked="" type="checkbox"/> Positive <input type="checkbox"/> Negative
Date	Supplier	Customer	Client	
17-07-21				

	EGPC – THE EGYPTIAN GENERAL PETROLEUM CORPORATION.	
---	---	---

3. EQUIPMENT CHECK

3.1	Visual check of power and auxiliary equipment like circuit breakers, switches, relays, contactors, lamps (model / rating).			
	Aim	Check the correct selection, installation and wiring of the circuit breakers and switches.		
	Pre-requisites	N.A.		
	Test description	Visual inspection of electrical components.		
	Acceptance criteria	The LVSWG circuit breakers and switches must be in compliance with the following document: 01251-100-S07-E10-0001 LVSWG Single line Diagram		
	Instrument	N.A.		
	Notes	<p>* the 230 Vac/110 VDC power Supply is missing the 12V module that shall be provided by Ccar</p>		
	Executed	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Result	<input checked="" type="checkbox"/> Positive <input type="checkbox"/> Negative
Date	Supplier	Customer	Client	
17-07-21				



**EGPC – THE EGYPTIAN GENERAL
PETROLEUM CORPORATION.**



4. ELECTRICAL SAFETY CHECK

Insulation resistance test main circuits			
Aim	A measurement of the resistance of the main circuit shall be made in accordance to IEC 61439-1 Standard.		
Pre-requisites	N.A.		
Test description	The measurement shall be made with DC voltage MegaOhmmeter by measuring the resistance across the terminals of each phase.		
Acceptance criteria	Resistance value bigger than 10 Mohm. The measured value of the resistance shall be listed in the test report, as well as the general conditions during the test (current, air temperature, etc.) for future comparison.		
Instrument	Type: <u>MEGGGER</u> Mod.: <u>MIT40-2</u> S/N: <u> </u> Test Certificate: <u> </u>		
4.1.1	Test results	<u>L1-G = 213 GΩ</u> <u>L2-G = 2179 GΩ</u> <u>L3-G = 2180 GΩ</u> <u>W-G = 59 GΩ</u>	
	Notes		
Executed	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Result	<input checked="" type="checkbox"/> Positive <input type="checkbox"/> Negative
Date	Supplier	Customer	Client
<u>17-04-21</u>	<u> </u>	<u> </u>	<u> </u>



**EGPC – THE EGYPTIAN GENERAL
PETROLEUM CORPORATION.**




Dielectric test for main circuits.			
Aim	Perform a dielectric test of the main circuits in accordance to IEC 61439-1 Standard.		
Pre-requisites	N.A.		
Test description	Withstand voltage should be 2,5 kV ac for 5 seconds. The power-frequency voltage test shall be performed according to the IEC requirements. The test voltage shall be applied connecting each phase conductor of the main circuit in turn to the high-voltage terminal of the test supply, Dielectric tests shall be done on 10% of the number of similar units with a minimum of 2 units.		
Acceptance criteria	Please refer to chapter 10.9.2.4 of the CEI EN 61439-1 Standard.		
4.1.2 Instrument	Type: <u>METROL</u> Mod.: <u>MI 2170</u> S/N: <u>SA005</u> Test Certificate: <u>3004-2</u>		
Test results	<u>L1 - 0 = 1,5 MA</u> <u>L2 - 0 = 1,5 MA</u> <u>L3 - 0 = 2,2 MA</u> <u>N - 0 = 1,5 MA</u>		
Notes			
Executed	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Result	<input checked="" type="checkbox"/> Positive <input type="checkbox"/> Negative
Date	Supplier	Customer	Client
<u>17/07/11</u>	<u>[Signature]</u>	<u>[Signature]</u>	<u>[Signature]</u>



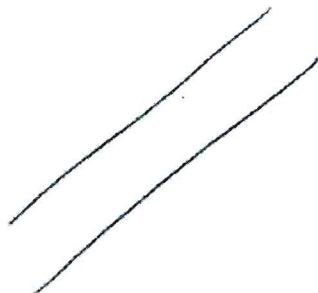
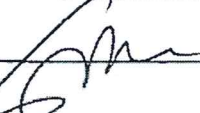

**EGPC - THE EGYPTIAN GENERAL
PETROLEUM CORPORATION.**



Dielectric test for auxiliary circuits.			
Aim	Perform a dielectric test of the auxiliary circuits in accordance with CEI EN 61439-1 standard.		
Pre-requisites	N.A.		
Test description	Withstand voltage should be 1500 V ac for 5 seconds. Dielectric tests shall be done on 10% of the number of similar units with a minimum of 2 units.		
Acceptance criteria	Please refer to chapter 10.9.2.4 of the CEI EN 61439-1 Standard.		
Instrument	Type: <u>MOTHEL</u> Mod.: <u>H.F.2770</u> S/N: <u>SH005</u> Test Certificate: <u>3004-1</u>		
4.1.3	Test results	<p>Feeder Aux SUPPLY = $C = 0,2\text{MA}$ $W = 0,2\text{MA}$</p> <p>Dc Aux SUPPLY = $C = 0,3\text{MA}$ $W = 0,3\text{MA}$</p> <p>REF 615 Aux SUPPLY = $C = 0,2\text{MA}$ $W = 0,2\text{MA}$</p> <p>Aux SUPPLY 230V = $C = 25\text{MA}$ $W = 22\text{MA}$</p> <p>Aux SUPPLY 110V Dc = $C = 0,2\text{MA}$ $W = 0,2\text{MA}$</p>	
	Notes		
Executed	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Result	<input checked="" type="checkbox"/> Positive <input type="checkbox"/> Negative
Date	Supplier	Customer	Client
17/07/21			

	<p align="center">EGPC – THE EGYPTIAN GENERAL PETROLEUM CORPORATION.</p>	
---	---	---

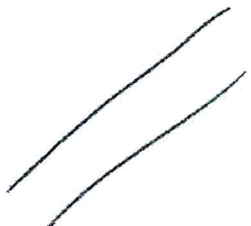
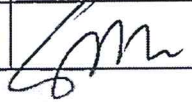
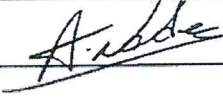

5. POWER SUPPLY CHECK

5.1.1	Main circuits Power supply				
	Aim	Check the main circuits power supply.			
	Pre-requisites	N.A.			
	Test description	Check the presence and the value of the main power supply voltage.			
	Acceptance criteria	The main circuits power supply voltage should be 400V 3P+N 50Hz.			
	Instrument	Type: ... <u>HT-1134A</u> Mod.: <u>HT-3200</u> S/N: <u>83602523</u> Test Certificate: ... <u>7564</u>			
	Measured voltage	Value	<u>400V</u>	Frequency	<u>50Hz</u>
	Notes				
	Executed	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		Result	<input checked="" type="checkbox"/> Positive <input type="checkbox"/> Negative
	Date	Supplier	Customer	Client	
<u>17-07-21</u>		<u>Abdel</u>			



**EGPC – THE EGYPTIAN GENERAL
PETROLEUM CORPORATION.**




Auxiliary circuits Power supply				
Aim	Check the auxiliary circuits power supply.			
Pre-requisites	N.A.			
Test description	Check the presence and the value of the auxiliary power supply voltage.			
Acceptance criteria	The auxiliary circuits power supply voltage should be 230V 1P+N 50Hz.			
Instrument	Type: F.I.T. 11344 Mod. HT 3700 S/N: 98600593 Test Certificate: 7544 Test Certificate: 7544			
Measured voltage	Value	230V	Frequen cy	50Hz
5.1.2	Notes 			
Executed	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Result	<input checked="" type="checkbox"/> Positive <input type="checkbox"/> Negative	
Date	Supplier	Customer	Client	
17-07-21				



**EGPC – THE EGYPTIAN GENERAL
PETROLEUM CORPORATION.**



Heaters and Internal light				
Aim	Check the heaters power supply.			
Pre-requisites	Low voltage auxiliary power supply 230 Vac control circuits interconnected.			
Test description	N.A.			
Acceptance criteria	The heaters power supply voltage should be 230V 1P+N 50Hz.			
Instrument	Type: ... <u>HT.LT.01A</u> Mod.: <u>HT.01.00</u> .. S/N: <u>03.6.00.5.98</u> Test Certificate: ... <u>7364</u>			
Measured voltage	Value	<u>230V</u>	Frequency	<u>50Hz</u>
5.1.3	Notes 			
Executed	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Result	<input checked="" type="checkbox"/> Positive <input type="checkbox"/> Negative	
Date	Supplier	Customer	Client	
<u>17-07-21</u>	<u>[Signature]</u>	<u>[Signature]</u>	<u>[Signature]</u>	

	EGPC – THE EGYPTIAN GENERAL PETROLEUM CORPORATION.	
---	---	---

6. FUNCTIONAL TESTING.

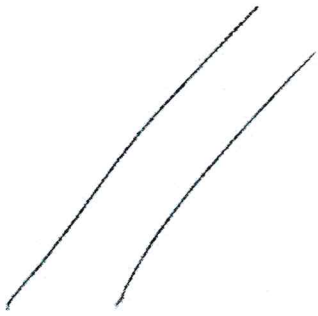
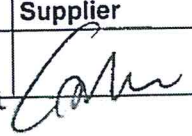
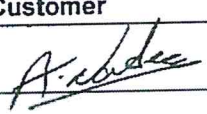
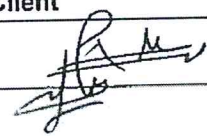
6.1. Electrical equipment.

6.1.1	LVSWG power sections operating conditions.			
	Aim	Operation tests shall be made to ensure that the switching devices and removable parts and mechanical interlocks work properly.		
	Pre-requisites	N.A.		
	Test description	These tests shall be performed without voltage on or current in the main circuits.		
	Acceptance criteria	It shall be verified that: – the switching devices open and close correctly – each removable part can be inserted and removed correctly; – all interlocks work properly.		
	Instrument			
	Notes			
	Executed	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Result	<input checked="" type="checkbox"/> Positive <input type="checkbox"/> Negative
	Date	Supplier	Customer	Client
	17-07-21	<i>[Signature]</i>	<i>[Signature]</i>	<i>[Signature]</i>



**EGPC – THE EGYPTIAN GENERAL
PETROLEUM CORPORATION.**

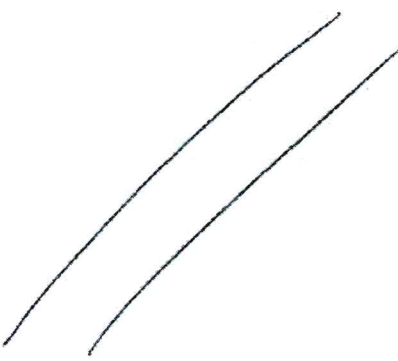
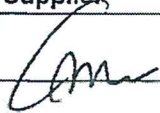
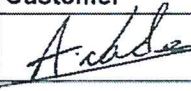
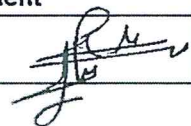


LVSWG withdrawable units operating conditions.			
Aim	Check the functioning of the LVSWG withdrawable motor starters		
Pre-requisites	N.A.		
Test description	Check the mechanical and electrical functioning of the withdrawable units: <ul style="list-style-type: none">• TEST mode;• REMOTE mode;		
Acceptance criteria	The mechanical and electrical functioning of the withdrawable units must be in compliance with the following document: 01251-100-S07-E10-0001 LVSWG Single line Diagram		
6.1.2	Checked units		
	Notes		
Executed	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Result	<input checked="" type="checkbox"/> Positive <input type="checkbox"/> Negative
Date	Supplier	Customer	Client
17-07-2022			



**EGPC – THE EGYPTIAN GENERAL
PETROLEUM CORPORATION.**

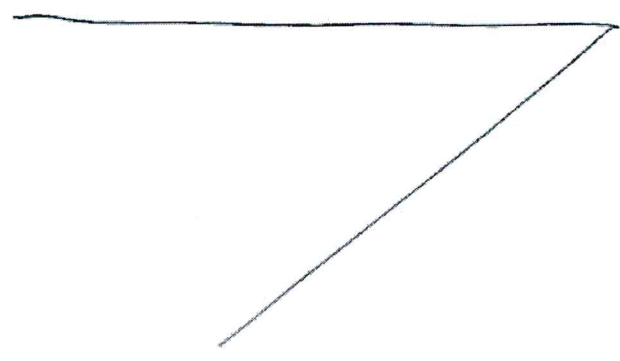
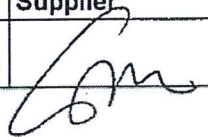
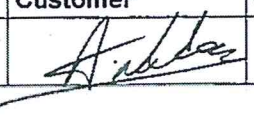
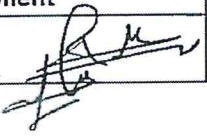


LVSWG withdrawable units operating conditions.			
Aim	Check the functioning of the LVSWG withdrawable feeders		
Pre-requisites	N.A.		
Test description	Check the mechanical and electrical functioning of the withdrawable units:		
Acceptance criteria	The mechanical and electrical functioning of the withdrawable units must be in compliance with the following document: 01251-100-S07-E10-0001 LVSWG Single line Diagram		
6.1.3	Checked units		
	Notes		
Executed	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Result	<input checked="" type="checkbox"/> Positive <input type="checkbox"/> Negative
Date	Supplier	Customer	Client
17-07-2022			



**EGPC – THE EGYPTIAN GENERAL
PETROLEUM CORPORATION.**



6.1.4	Protection relays functional test.			
	Aim	Check and test the protective relays by current injection on primary and secondary circuits.		
	Pre-requisites	N.A.		
	Test description	Inject the test current into the primary and secondary circuits of the Current Transformers and check the intervention of the relevant protection relays. Protection relays to be checked are the ones of the: <ul style="list-style-type: none">• LVSWWG Incoming sections;• LVSWG withdrawable units.		
	Acceptance criteria	The protection relays intervention must be in compliance with the following document: 01251-100-S07-E10-0001 LVSWG Single line Diagram		
	Protection functions Tested	AS PAT REPORT 		
	Notes			
	Executed	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Result	<input checked="" type="checkbox"/> Positive <input type="checkbox"/> Negative
Date	Supplier	Customer	Client	
17-07-11				



**EGPC – THE EGYPTIAN GENERAL
PETROLEUM CORPORATION.**



Inter-changeability of electrically identical components.			
Aim	Check the inter-changeability of electrically identical components.		
Pre-requisites	N.A.		
Test description	Change the position/assembling of electrically identical components.		
Acceptance criteria	The system LVSWG must continue to work properly.		
6.1.5 Notes			
Executed	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Result	<input checked="" type="checkbox"/> Positive <input type="checkbox"/> Negative
Date	Supplier	Customer	Client
17-07-21	<i>[Signature]</i>	<i>[Signature]</i>	<i>[Signature]</i>



**EGPC – THE EGYPTIAN GENERAL
PETROLEUM CORPORATION.**



7. COMMISSIONING and START-UP PROCEDURES

7.1. Preliminary operations.

Before starting-up the electrical and instrumentation commissioning of the M.C.C. all the erection activity have to be completed and all the followings point should be checked and confirmed.

7.1.1 Mechanical assembling check list.

	Check equipment' alignment	<input checked="" type="checkbox"/>
	Check all bolts fixing	<input checked="" type="checkbox"/>

7.1.2 Electrical connection check list.

	Check cabling connection	<input checked="" type="checkbox"/>
	Check the insulation resistance of the outgoing cabling before energising the loads	<input checked="" type="checkbox"/>

7.1.3 Checks without power supply.

Before energising the system, all the followings point should be checked and confirmed.

	Check the grounding connection of the MCC	<input checked="" type="checkbox"/>
	Check and set all the electrical protection as per the wiring diagram	<input checked="" type="checkbox"/>

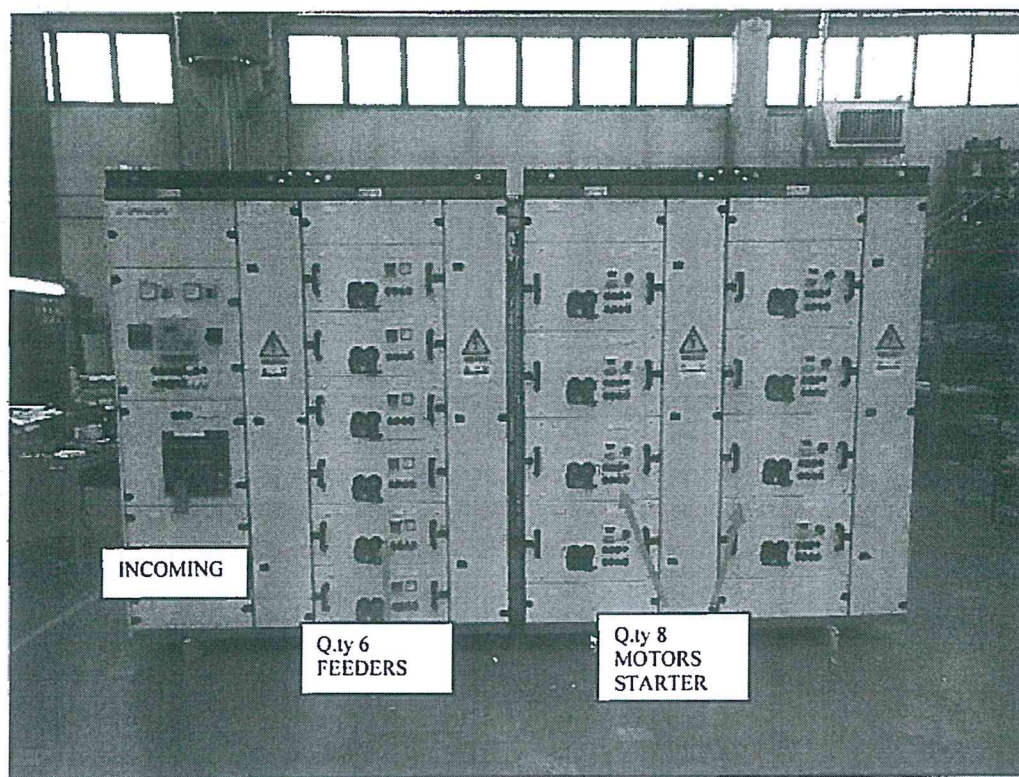
7.2.COMMISSIONING

Before starting the MCC energising sequence, all the Incoming Line Circuit breaker, the drawers main circuit breakers and the miniature circuit breakers must be previously opened.

MCC Power section commissioning/operating.

The MCC is supplied by one incoming line from transformer Tag 0XY-EPM(Z)-TR-1 400V 3ph +P + N (see fig. 1.1).

Fig. 1.1 – MCC Incoming Lines



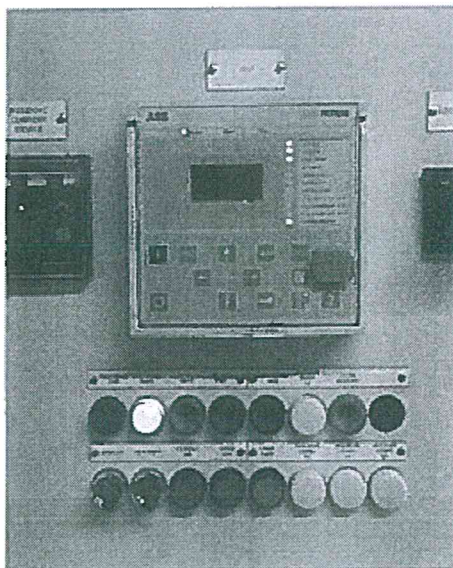
To start with the commissioning operation the LVSWG MMC shall be fed from the transformer 400 V 50 Hz 3P +N for power circuits and fed from the UPD panel for the auxiliary circuits 230V 50 Hz 1P+N.

7.3. INCOMING LINE SWITCH FUNCTION (column 1)

7.3.1. NORMAL OPERATION

MAIN INCOMING SWITCH ON- OFF COMMAND

The main switch can be commanded in the following mode by the selector switch and operators installed on the auxiliary command panel of the incoming column of the MCC. (see picture below)



Selector switch 30SA1 "Manual-Automatic" function

- Manual position defines the switch command by Local command from the MCC

- Automatic position defines the switch command by the control relay REF 615.

Selector switch 30SA2 "Local-Remote" function

- Local position defines the command switch by the start/stop pushbutton installed on the command panel

- Remote position defines the command switch by the command from DCS Enppi

Local Operation sequences:

- Turn the selector switch 30SA1 in Manual position

- Turn the selector switch 30SA2 in Local position

- Press the pushbutton 30SB1 for "Close" command

- Press the pushbutton 30SB2 for "Open" command



**EGPC – THE EGYPTIAN GENERAL
PETROLEUM CORPORATION.**



Remote Operation sequences:

- Turn the selector switch 30SA1 in Automatic position
- Turn the selector switch 30SA2 in Remote position
- The command "Closed" from DCS command the closing of switch
- The command "Open" from DCS command the opening switch

Automatic Operation sequences:

- Turn the selector switch 30SA1 in Automatic position
- The "Close" command is generated from the relay REF 615
- The "Open" command is generated from the relay REF 615

7.3.2. POWER SUPPLY LOSS

The main incoming switch shall open due to under voltage protection (F27) controlled by protection relay REF615 (27A1)

The main switch of the feeder drawer shall remain closed

The main switch of the DOL drawer shall remain closed, motor contactor contactors shall open if under voltage continue more than 4.5 seconds.

7.3.3. POWER RESTORATION

The main incoming switch shall be closed in one of the way indicated in the point 1
Local, Remote or Automatic

If the motor contactor open, due to power loss for more than 4.5 seconds,) can be restarted manually from the local control station (Local Start/Stop) or from the DCS command (Start/Stop contact).

See point 8.3 DOL drawer

7.4.LVSWG MCC Columns

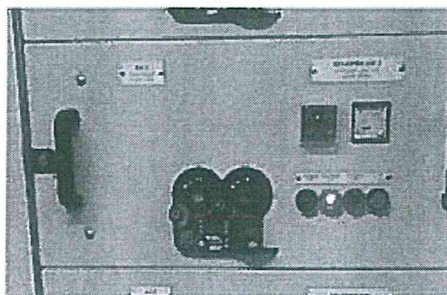
7.4.1. Drawer feeder commissioning/operating (column 2)

The drawer feeder column 2 is equipped with:

- Q.ty 5 Type F 4 poles drawers for feeder 100A
- Q.ty 1 Type F 3 poles drawers for feeder 63A

Front Drawer feeder type F (3 & 4 poles) see below picture

- PA80A Ammeter;
- 84SB1, Lamp Test blue push-button
- 84HL1, Green signal lamps (Circuit breaker open)
- 84HL2, Red signal lamps (Circuit breaker closed)
- 84HL3, Yellow signal lamps (Circuit breaker tripped on fault)
- 82A1, Residual current monitor






The feeders are connected according to the doc. 01251-100-S07-E10-0001

Test sequence

Check that the MCC in energized	<input checked="" type="checkbox"/>
Insert the drawer	<input checked="" type="checkbox"/>
✓ Check the correct function of the signal lamps by pushing the:	<input checked="" type="checkbox"/>
✓ 84SB1 Lamp test push button	<input checked="" type="checkbox"/>
✓ 84HL1, Green signal lamps (Circuit breaker open)	<input checked="" type="checkbox"/>
✓ 84HL2, Red signal lamps (Circuit breaker closed)	<input checked="" type="checkbox"/>
✓ 84HL3, Yellow signal lamps (Circuit breaker tripped)	<input checked="" type="checkbox"/>
✓ 82A1, Residual current monitoring check	<input checked="" type="checkbox"/>

Service sequence

Insert the key; press and rotate 180° clockwise to "I" position to insert the incoming power connector switch	
Remove the key from the left side rotary handle	
Insert the key in the right side rotary handle, press and rotate 90° clockwise to "I" position; the main incoming circuit breaker is closed and the feeder is now operating	

See attachment Lafer ME_CUB ITA ENG manual drawer operation

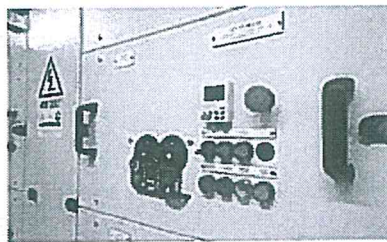
7.4.2. DOL drawer commissioning/operating (column 3 and 4)

The DOL drawer column 3 and 4 is equipped with

- Q.ty 4 Type M 3 poles drawers DOL motor starter > 7,5 kW and <75kW

Front DOL Drawer type M (3 poles) Motor starter > 7,5 Kw and <75kW see below picture

- 53SA1, TEST-OFF-REMOTE black selector switch with 3 maintained position.
- 53SB2, STOP red push-button
- 53SB3, START green push-button
- 55SB1, Lamp Test blue push-button
- 55HL1, Red signal lamps (RUN - MOTOR ON)
- 55HL2, Green signal lamps (STOP- MOTOR OFF)
- 55HL3, Yellow signal lamps (MOTOR FAULT)
- 53SB1, Mushroom Emergency stop push button



Motor starter drawer are connecting in according the doc. 01251-100-S07-E10-0001



**EGPC – THE EGYPTIAN GENERAL
PETROLEUM CORPORATION.**



DOL motor starter is equipped with:

- QF50.1, LV moulded case circuit breaker
- UMC100.3 UC controller with UMC panel LCD DISPLAY

Test sequence

Check that the MCC is energized	<input checked="" type="checkbox"/>
Insert the drawer	<input checked="" type="checkbox"/>



<ul style="list-style-type: none">✓ Check the correct function of the signal lamps by pushing the:✓ 55SB1 Lamp test push button✓ 55HL1, Green signal lamps (Circuit breaker open)✓ 55HL2, Red signal lamps (Circuit breaker closed)✓ 55HL3, Yellow signal lamps (Circuit breaker tripped)	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>
---	---

<p>Turn in "TEST" position the selector switch 53SA1 to TEST the control circuit UMC100.3 (contactor closed → no power on the outgoing clamps)</p> <ul style="list-style-type: none">✓ Check the status of the UMC100.3✓ 55HL2, green lamp "ON" means contactor open (Motor off)✓ 55HL1, red lamp "ON" means contactor closed (Motor on)✓ 55HL3, yellow lamp of reset pushbutton "ON" means main circuit breaker TRIP or UMC100.3 fault	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>
--	--

<p>By the push button installed on the front of the drawer is possible to command the motor contactor:</p> <ul style="list-style-type: none">✓ 53SB1 Mushroom Stop pushbutton (emergency Stop)✓ 53SB3 Start command✓ 55HL1, red lamp "ON" means contactor closed (Motor on)✓ 53SB2 Stop command✓ 55HL2, green lamp "ON" means contactor open (Motor off)✓ 55HL3, yellow lamp of reset pushbutton "ON" means main circuit breaker TRIP or UMC100.3 fault	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>
--	--



Push the little grey button sited on the left side of the drawer (as indicated by the relevant label "STARTING OPERATION) in order to let you insert the operating key into the incoming power connector switch rotary handle	
Insert the key; press and rotate 180° clockwise to "I" position to insert the incoming power connector switch	
Remove the key from the left side rotary handle	
Insert the key in the right side rotary handle, press and rotate 90° clockwise to "I" position; the main incoming circuit breaker is closed and the unit is now operating	
Turn in " REMOTE " position the selector switch 53SA1 to let command remotely the motor starter. The " REMOTE " position allows the command of the motor from a local pushbutton installed at site near the motor. The local pushbutton is equipped with: ✓ 54SA1, 3 Position selector switch " HAND-0-AUTO " ✓ 54SB2, Start pushbutton ✓ 54SB1, Stop pushbutton " Hand " position With the selector switch in " HAND " position the operator can start and stop the motor by a relevant Start and Stop pushbuttons installed on the local pushbutton. The start command is under the authorization from the DCS by digital contact "Permission" The stop command from DCS and the ESD stop are always in operation. Turning the selector switch 54SA1 on the local pushbutton in "0" position the motor stop The mushroom Stop pushbutton on the drawer (emergency Stop) is always in operation " Auto " position command by DCS (star/stop digital contact) With the selector switch in " AUTO " position the start and stop command of the motor is controlled from DCS by a digital contact The stop command from DCS and the ESD stop are always in operation. The stop pushbutton is always in operation. Turning the selector switch 54SA1 on the local pushbutton in "0" position the motor stop The mushroom Stop pushbutton on the drawer (emergency Stop) is always in operation	

	<u>EGPC – THE EGYPTIAN GENERAL PETROLEUM CORPORATION.</u>	
---	--	---

CRUDE OIL TANK FARM 1251-100

EPM MODULE 030-EPM1

DRY TYPE TRANSFORMER

SAT

Commissioning and Site Integration Test Procedures

1	16/11/2020	Approval	BP	LS	GA		
0	30/10/2020	Approval	BP	LS	GA		
Rev.	Date	Issued For	Prepared	Checked	Approved	Approved	Approved
<u>Notes:</u>			EGPC – THE EGYPTIAN GENERAL PETROLEUM CO.				
			Contract Number: 1251-100-500-16				
			Enppi Ref.: 01251-100-S07-P06-0003 R.1				
					Language: E		Total Pages 9
This document is the property of Enppi. It must not be stored reproduced or disclosed to others without written authorization from the COMPANY							

	<p align="center"><u>EGPC – THE EGYPTIAN GENERAL PETROLEUM CORPORATION.</u></p>	
---	--	---

INDEX

INTRODUCTION SAT PROCEDURE	3
Aim of the document.....	3
Personnel involved in the SAT.....	3
DESCRIPTION OF THE TESTS.....	4
1. Documentation.....	4
2. Visual Check (without voltage supply).....	6
3. H.V. Cable Connection box.....	7
4. Earthing Connection Check (without voltage supply).....	8
5. H.V. Transformer energization 6,6 kV from Enppi substation (Power ON).....	9

	<u>EGPC – THE EGYPTIAN GENERAL PETROLEUM CORPORATION.</u>	
---	--	---

INTRODUCTION SAT PROCEDURE

Aim of the document.

This document is the FAT, Functional & Performance Test for the EPM Electrical Power Module

The document is the acceptance protocol concerning the characteristics of the supplied EPM

Definition:

Supplier: CEAR

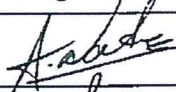

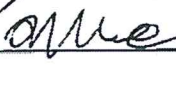
Customer: ENPPI



Client: PPC

Personnel involved in the SAT.

The table below shows the people who participate at the activity of the SAT (Commissioning and Site Integration Test): the present people must sign next to their name.

CEAR and ENPPI can use an external Inspector / Agency or third-party Body.

Name and Surname	Company/Position	Signature	Date
Ahmed Chakem	ENPPI		17/7/2021
M. Ibrahim	PPC		17/7/2021
COTI COTIM FABIO	CEAR		17-07-21
	CEAR		

	<p align="center"><u>EGPC – THE EGYPTIAN GENERAL PETROLEUM CORPORATION.</u></p>	
---	--	---

DESCRIPTION OF THE TESTS

Visual test will be performed to verify the good workmanship, the absence of sharpen edge, the absence of damages on the welds.

Dimensional Check will be performed to check if the dimensions of the component are in tolerances as per manufacturing drawings.

Surface Painting check will be performed to check the painting coating and final internal/external color.

Identification and Marking Check

Routine test certificate check

1. Documentation

Following a list of the relevant documents used to perform the SAT (please fill the table with the last revision number of the documents used).



Document No.	Rev.	Description
01251-100-S07-B01-0001	R.7	EPM General Arrangements
01251-100-S07-E99-0007	R.4	Dry Type Transformer General Arrangement
01251-100-S07-K09-0005	R.3	EPM Transformer Data Sheet Supplier
01251-100-S07-K11-0005	R.4	EPM Filled in Purchaser Transformer Data Sheet
01251-100-S07-K11-0006	R.5	EPM Filled in Purchaser Bus Duct Data Sheet
01251-100-S07-E99-0006	R.4	LV Bus Duct General Arrangement
01251-100-S07-K12-0001	R.1	EPM Noise Data Sheet
01251-100-S07-E99-0009	R.4	Earthing system layout
01251-100-S07-E10-0001	R.5	LVSWG Single Line Diagram



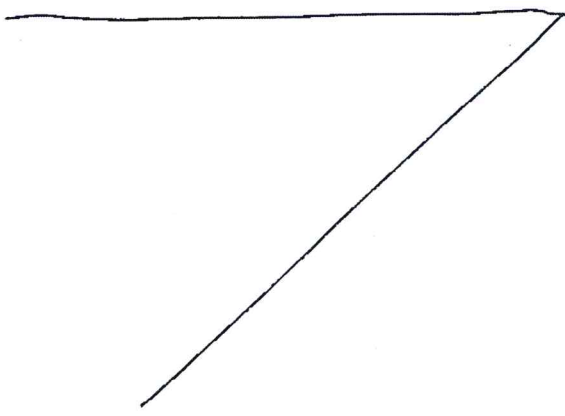
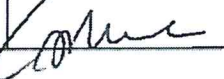
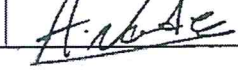

**EGPC – THE EGYPTIAN GENERAL
PETROLEUM CORPORATION.**



Documentation check			
Aim	Check the presence of the project documentation.		
Pre-requisites	N.A.		
Test description	Check the presence and the state of the documentation listed on chapter 1.2 of the FAT procedure.		
Acceptance criteria	All the documentation listed on chapter 1.1 Section 1 of the FAT procedure have to be present.		
1.1	Notes		
Executed	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Result	<input checked="" type="checkbox"/> Positive <input type="checkbox"/> Negative
Date	Supplier	Customer	Client
17-05-20	Comen	Alkader	Ru

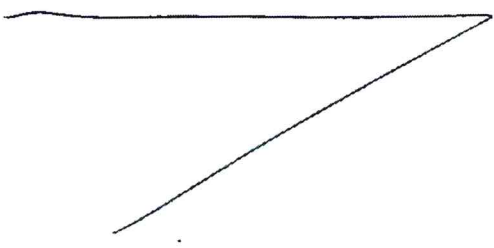
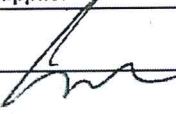
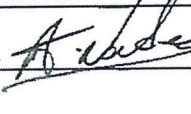

	<p align="center">EGPC – THE EGYPTIAN GENERAL PETROLEUM CORPORATION.</p>	
---	---	---

2. Visual Check (without voltage supply)

2.2.1	Visual Check			
	Aim	Visual check of the good construction of the transformer and the transformer box		
	Pre-requisites	N.A.		
	Test description	Visual test will be performed to verify the good workmanship, the absence of sharpen edge, the absence of damages.		
	Acceptance criteria	Visual test and relevant photo		
	Notes	<p>MU CABLES IS TERMINATED BUT IS NOT CONNECTED</p> 		
Executed	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Result	<input checked="" type="checkbox"/> Positive <input type="checkbox"/> Negative	
Date	Supplier	Customer	Client	
1707-21				

	<p align="center">EGPC – THE EGYPTIAN GENERAL PETROLEUM CORPORATION.</p>	
---	---	---

3. H.V. Cable Connection box

3.1	HV Cable Connection box			
	Aim	Verify the connection between transformer and HV box		
	Pre-requisites	N.A.		
	Test description	Visual connection marking check and tightening bolt control		
	Acceptance criteria	The dimensions must be in compliance with the values reported on the following documents: 01251-100-S07-E99-000 7 Dry Type transformer General Arrangements		
	Marking phase check			
	Notes	<p>IMPORTANT NOTE All operations concerning the H.V and MCT cable installation, cable connection ,6,6 kV power supply control, cable insulation and relevant tests are in charge of Enppi electrical commissioning department. Before supply the transformer with 6,6 kV all test must be done and certified with a test report.</p> <p>M.V. CABLE IS NOT CONNECTION</p> 		
	Executed	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Result	<input checked="" type="checkbox"/> Positive <input type="checkbox"/> Negative
Date	Supplier	Customer	Client	
				



**EGPC – THE EGYPTIAN GENERAL
PETROLEUM CORPORATION.**



4. Earthing Connection Check (without voltage supply)

Earthing Connection continuity check			
Aim	Verify the installation of the earthing connection		
Pre-requisites	N.A.		
Test description	The installation and the material must be in compliance with the values reported on the following documents: 01251-100-S07-E99-0009 Earthing System Layout 01251-100-S07-K009-0005 EPM Transformer Data Sheet Supplier		
Acceptance Criteria	The resistance measured shall be at least $< \Omega$.		
Instrument	Type: <u>LA 506</u> Mod.: <u>MT 920-2</u> S/N: <u> </u> Test Certificate: <u> </u>		
4.1	Resistance value: <u>1</u> Ω		
Notes			
Executed	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Result	<input checked="" type="checkbox"/> Positive <input type="checkbox"/> Negative
Date	Supplier	Customer	Client
17 07-20			





**EGPC – THE EGYPTIAN GENERAL
PETROLEUM CORPORATION.**



5. H.V. Transformer energization 6,6 kV from Enppi substation (power on)
The activity is in charge of Enppi commissioning department

Power on transformer 6,6 kV			
Alm	Energize the EPM transformer from the substation Enppi		
Pre-requisites	All operations and safety rules must be in charge of Enppi		
Test description	Energizing operation from the substation		
Acceptance Criteria	Verify the voltage value in accordance with the 01251-100-S07-K009-0005 EPM Transformer t Data Sheet Supplier		
Instrument	Verify and check the voltage value in the substation room		
5.1	Notes	<p>IMPORTANT NOTE All operations concerning the H.V and MCT cable installation, cable connection ,6,6 kV power supply control, cable insulation and relevant tests are in charge of Enppi electrical commissioning department. Before supply the transformer with 6,6 kV all test must be done and certified with a test report.</p> <p>Report test check Power supplykV 17-07-21 6.6kV L1-L2:kV IS NOT AVAILABLE L2-L3:kV AFTER POWER UP L3-L1:kV</p> <p>Insulation resistance test H.V cable PERFORMED TEST. Resistance value: Ω</p> <p>Dielectric test H.V. cable</p>	
Executed	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Result	<input checked="" type="checkbox"/> Positive <input type="checkbox"/> Negative
Date	Supplier	Customer	Client
17-07-21			

	<u>EGPC – THE EGYPTIAN GENERAL PETROLEUM CORPORATION.</u>	
---	--	---

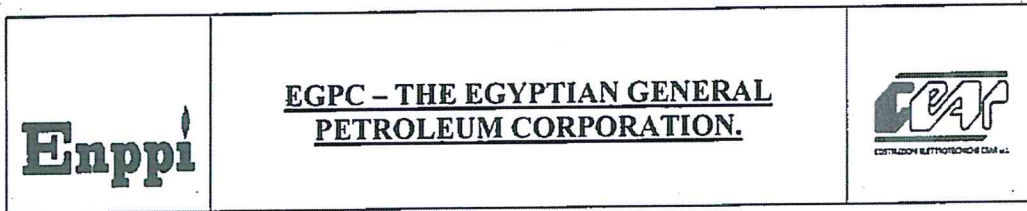
CRUDE OIL TANK FARM 1251-100

EPM MODULE 030-EPM1

BUS DUCT

SAT Commissioning and Site Integration Test Procedures

1	17/11/2020	Approval	BP	LS	GA		
0	30/10/2020	Approval	BP	LS	GA		
Rev.	Date	Issued For	Prepared	Checked	Approved	Approved	Approved
<u>Notes:</u>			EGPC – THE EGYPTIAN GENERAL PETROLEUM CO.				
			Contract Number: 1251-100-510-16				
			Enppi Ref.: 01251-100-S07-P06-0004 R 1				
			Language: E			Total Pages 9	
This document is the property of Enppi It must not be stored reproduced or disclosed to others without written authorization from the COMPANY							



INDEX

Aim of the document	3
Personnel involved in the SAT.....	3
DESCRIPTION OF THE TESTS.....	4
1 Documentation.....	4
2. Visual Check	6
3. Electrical Safety Check	7

	EGPC – THE EGYPTIAN GENERAL PETROLEUM CORPORATION.	
---	---	---

INTRODUCTION BUS DUCT PROCEDURE

Aim of the document.

This document is the FAT, Functional & Performance Test for the EPM Electrical Power Module

The document is the acceptance protocol concerning the characteristics of the supplied EPM

Definition:

Supplier: CEAR

Customer: ENPPI



Client: PPC

Personnel involved in the SAT.

The table below shows the people who participate at the activity of the SAT (Commissioning and Site Integration Test): the present people must sign next to their name.

CEAR and ENPPI can use an external Inspector / Agency or third-party Body.

Name and Surname	Company/Position	Signature	Date
Ahmed Abdelkader	ENPPI		17/7/2021
M. Ibrahim	PPC		17/7/2021
COTI, COTIM FADIS	CEAR		17-07-21
	CEAR		

	<p align="center"><u>EGPC – THE EGYPTIAN GENERAL PETROLEUM CORPORATION.</u></p>	
---	--	---

DESCRIPTION OF THE TESTS

Visual test will be performed to verify the good workmanship, the absence of sharpen edge, the absence of damages on the welds.

Dimensional Check will be performed to check if the dimensions of the component are in tolerances as per manufacturing drawings.

Surface Painting check will be performed to check the painting coating and final internal/external color.

Identification and Marking Check will

Safety check insulation and dielectric test

1 Documentation.

Following a list of the relevant documents used to perform the FAT (please fill the table with the last revision number of the documents used).



Document No.	Rev.	Description
01251-100-S07-B01-0001	R.7	EPM General Arrangements
01251-100-S07-E99-0006	R.4	LV Bus Duct General Arrangement
01251-100-S07-K09-0006	R.2	EPM Bus Duct Data Sheet Supplier
01251-100-S07-K11-0006	R.5	EPM Filled in Purchaser Bus Duct Data Sheet
01251-100-S07-E99-0007	R.4	Dry Type Transformer General Arrangement



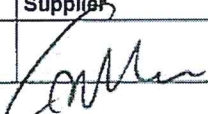
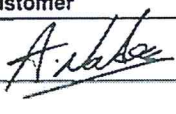
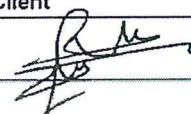
**EGPC – THE EGYPTIAN GENERAL
PETROLEUM CORPORATION.**



Documentation check			
Aim	Check the presence of the project documentation.		
Pre-requisites	N.A.		
Test description	Check the presence and the state of the documentation listed on chapter 1.2 of the FAT procedure.		
Acceptance criteria	All the documentation listed on chapter 1.1 Section 1 of the FAT procedure have to be present.		
1.1.1	Notes		
Executed	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Result	<input checked="" type="checkbox"/> Positive <input type="checkbox"/> Negative
Date	Supplier	Customer	Client
17-07-21			

	EGPC – THE EGYPTIAN GENERAL PETROLEUM CORPORATION.	
---	---	---


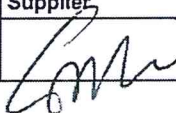
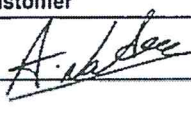
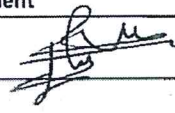
2. Visual Check

2.1	Visual Check					
	Aim	Visual check of the good construction of the Bus Duct				
	Pre-requisites	N.A.				
	Test description	Visual test will be performed to verify the good workmanship, the absence of sharpen edge, the absence of damages.				
	Acceptance criteria	Visual test and relevant photo				
	Notes					
Executed	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Result	<input checked="" type="checkbox"/> Positive <input type="checkbox"/> Negative			
Date	Supplier	Customer	Client			
17/02/21						



7 of 9

	EGPC – THE EGYPTIAN GENERAL PETROLEUM CORPORATION.	
---	---	---



3.1.2	Electrical Safety Check Dielectric test for bus bars			
	Aim	Perform a dielectric test of the main circuits (400V ac) in accordance with CEI EN 61439-1 standard.		
	Pre-requisites	N.A.		
	Test description	Withstand voltage should be 2500 V ac for 1 minute. Dielectric tests shall be done on 10% of the number of similar units with a minimum of 2 units.		
	Acceptance criteria	Please refer to chapter 10.9.2.4 of the CEI EN 61439-1 Standard.		
	Instrument	Type: <u>METREL</u> Mod.: <u>MJ 2170</u> S/N: <u>S11005</u> Test Certificate: <u>3006-02</u>		
	Test results	$L1-G = 2,5 \text{ MA}$ $L2-G = 2,5 \text{ MA}$ $L3-G = 2,5 \text{ MA}$ $W-G = 2,5 \text{ MA}$ 		
	Notes			
Executed	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Result	<input checked="" type="checkbox"/> Positive <input type="checkbox"/> Negative	
Date	Supplier	Customer	Client	
17-07-21				

Enppi	EGPC – THE EGYPTIAN GENERAL PETROLEUM CORPORATION.	 EGYPTIAN GENERAL PETROLEUM CORPORATION
--------------	---	---

3.3 POWER SUPPLY CHECK

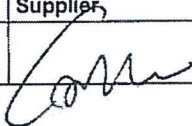
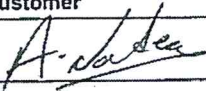
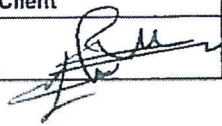
3.3.1	Main circuits Power supply					
	Aim	Check the main circuits power supply.				
	Pre-requisites	N.A.				
	Test description	Check the presence and the value of the main power supply voltage.				
	Acceptance criteria	The main circuits power supply voltage should be 400V 3P+N 50Hz.				
	Instrument	Type: <u>HT 170.47</u> Mod.: <u>HT 820.0</u> S/N: <u>98.600599</u> Test Certificate: <u>7544</u>				
	Measured voltage	Value	<u>400V</u>	Frequency	<u>50Hz</u>	
	Notes					
	Executed	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Result	<input checked="" type="checkbox"/> Positive	<input type="checkbox"/> Negative
	Date	Supplier	Customer	Client		
<u>17-07-21</u>	<u>Com</u>	<u>Arada</u>	<u>Ru</u>			



3.3.2	Auxiliary circuits Power supply					
	Aim	Check the auxiliary circuits power supply.				
	Pre-requisites	N.A.				
	Test description	Check the presence and the value of the auxiliary power supply voltage.				
	Acceptance criteria	The auxiliary circuits power supply voltage should be 230V 1P+N 50Hz.				
	Instrument	Type: <u>HT 170.47</u> Mod.: <u>HT 820.0</u> S/N: <u>98.600509</u> Test Certificate: <u>7544</u>				
	Measured voltage	Value	<u>230V</u>	Frequency	<u>50Hz</u>	
	Notes					
	Executed	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Result	<input checked="" type="checkbox"/> Positive	<input type="checkbox"/> Negative
	Date	Supplier	Customer	Client		
<u>17-07-21</u>	<u>Com</u>	<u>Arada</u>	<u>Ru</u>			

	EGPC – THE EGYPTIAN GENERAL PETROLEUM CORPORATION.	
---	---	---

4. FUNCTIONAL TESTING.

4.1 Electrical equipment.

4.1.	UPS operating conditions.			
	Aim	Check the functioning of the UPS		
	Pre-requisites	N.A.		
	Test description	Check the circuit breaker, signal lamps and verify the output distribution		
	Acceptance criteria	The electrical functioning of the UPS must be in compliance with the following document: 01251-100-S07-E10-0004 UPS Single & Wiring Diagram		
	Notes			
	Executed	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Result	<input checked="" type="checkbox"/> Positive <input type="checkbox"/> Negative
Date	Supplier	Customer	Client	
	17-07-21			

	<p align="center">EGPC – THE EGYPTIAN GENERAL PETROLEUM CORPORATION.</p>	
---	---	---

5 COMMISSIONING AND START-UP PROCEDURES UPS PANEL

5.1 Preliminary operation

The UPS panel provide to fed the auxiliary and command circuit of the LVSWG MCC panel the power supply of the F&G panel, the supply for external shut down valve and the Tank Radar Gauging.

The UPS is powered from the Enppi UPS Substation so as to guarantee continuity of power supply even in the event of a power loss.

Before starting-up the electrical and instrumentation commissioning of UPS Panel all connection with the other panel will be terminated and all the followings point should be checked and confirmed:

The circuit breakers of the others panel connected to the UPS panel must be in open position.

Each circuit is controlled by the relevant circuit breaker.

5.1.1. Mechanical assembling

	Check equipment's alignment	<input checked="" type="checkbox"/>
	Check all bolts fixing	<input checked="" type="checkbox"/>

5.1.2 Electrical / Instrument connecting

	Check cabling connection	<input checked="" type="checkbox"/>
	Check insulated test of cabling system before energizing on the outgoing	<input checked="" type="checkbox"/>

After confirmation, the UPS Panel is ready for electrical test without voltage supply

Field test check

Check and Test without voltage supply

Before energising the system, all the followings point should be checked and confirmed:

	Check earthing system connection from the external grounding system to the Indoor Power Distribution Panel ground bar (PE bar).	<input checked="" type="checkbox"/>
	Check and/or set all electrical protection as per the wiring diagram	<input checked="" type="checkbox"/>

After confirmation, the UPS Panel is ready for electrical and instrument test with power supply.

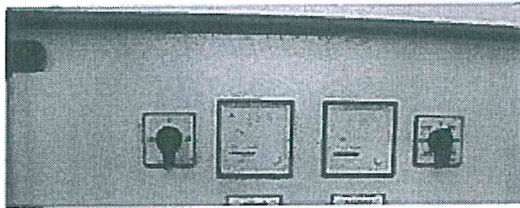
5.1.3 Check and Test with Voltage supply

Before energizing the indoor panel, all breaker must be open.

Require to Enppi supervisor to close the power circuit breaker in the UPS Substation and verify the voltage value.

The verification and the connection of the power supply cable is in charge to Enppi

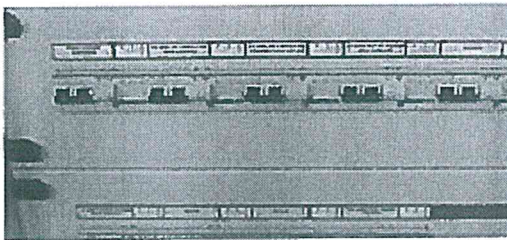
The UPS panel is provided with the following measuring control (see picture):





- Main circuit breaker
- Ammeter and relevant ammeter switch
- Voltmeter and relevant voltmeter switch

5.1.4 Test the circuit one by one and not at the same time in order to check correctly

Each lighting circuit is controlled by the relevant switch breaker, each breaker is equipped with 3 signal lamps green "OFF", red "ON", yellow "FAULT".



The next description includes the action for each section step by step.
For the function of each circuit breaker (Refer to the 01251-100-S07-E10-0003 Outdoor Panel Single Line and Wiring Diagram)

	<p align="center"><u>EGPC – THE EGYPTIAN GENERAL PETROLEUM CORPORATION.</u></p>	
---	--	---

The operation is the following:

<p>Check the voltage supply on the 3 P+N on the Voltmeter PV1 by the voltmeter switch SV 1 close the fuse switch QU1.1</p>
<p>Check by the Lamp Test SB1 the correct function of the signal lamp</p>
<p>Close the breaker QF 1.1 and supply the aux. transformer for signal lamp.</p>
<p>Close the Main Circuit breaker QF1</p>
<p>By the signal lamp HL1.1/2.1/3.1 check the status of main circuit breaker</p>
<p>Close the Circuit Breaker QF 2 to QF 12 step by step to supply all circuit and check the output voltage by voltmeter. For each circuit breaker are provided the following signal lamp: -Red Lamp Circuit breaker close -Green Lamp Circuit breaker open -Yellow Lamp Fault</p>

[illegible]

97/67/2027



**EGPC – THE EGYPTIAN GENERAL
PETROLEUM CORPORATION.**



6 FINAL CERTIFICATION

After SAT completion, check that all related documents are red marked up for future revision, fully fill-in, properly signed and traced with relevant attachments.

ACCEPTANCE CERTIFICATE

THE UNDERSIGNED HAS INSPECTED AND
PERFORMED SELECTED TESTS WITHIN THIS DOCUMENT
AND ACCEPTS THAT THE PRODUCED UNDER THE

P.O.:
DATED:

HAS BEEN TESTED AS PER SPECIFICATION
AND MEETS THE REQUIREMENTS OF CLIENT

M. G. Mohamed

FOR CONTRACTOR

M. Omar

FOR CLIENT

[Signature]

FOR VENDOR

27/7/2021


DATE


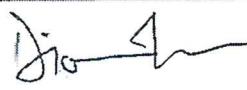
27.07.2021

Enppi**EGPC – THE EGYPTIAN GENERAL
PETROLEUM CORPORATION.****7 FINAL TEST REPORT**

Enppi					
DATE 30/10/2020		REVISION 0		PAGE 1 of 1	
TEST REPORT					
OBJECT OF THE TEST:					
COMMISSIONING SAT TEST _____ TAG EPM <u>030-EPM-01</u>					
REFERENCE DOC:					
INSPECTION & TEST PLAN 01251-100-S07-P12-0007					
SAT F&G 01251-100-S07-P06-0006					
LEGEND:					
NA: Not Applicable		P: Pending		S: Satisfactory	
FIRE DETECTION AND ALARM SYSTEM					
POS	DESCRIPTION	SAT			PENDING N°
		NA	P	S	
A.1	Visual and dimensional check			✓	
A.2	Wiring insulation and continuity test			✓	
4.1	Workmanship Material, Surface defects, components and general finish			✓	
4.2	Mark tagging and conformance to packing requirements			✓	
4.3	Hardware functionality			✓	
4.4	Software functionality			✓	
4.5	Site acceptance integration test			✓	
4.6	Power supply interruption test			✓	
Enppi Representative		Cear Representative		Date	
				p.p.c. Date M. amor	
REMARKS					
Smoke Detector (Smoke detector) has not any response. The interface signal (X0-005) Alarm trouble has no response also all the resistors required for the monitoring are installed for all the interfacing signals.					

M. B. M. A.
27/7/2021

Enppi	EGPC – THE EGYPTIAN GENERAL PETROLEUM CORPORATION.	
--------------	---	---

Enppi					
DATE 30/10/2020	REVISION 0	PAGE 1 of 1			
TEST REPORT					
OBJECT OF THE TEST: COMMISSIONING SAT TEST _____ TAG EPM 030-EPH-01					
REFERENCE DOC: INSPECTION & TEST PLAN 01251-100-S07-P12-0007 SAT F&G 01251-100-S07-P06-0006					
LEGEND: NA: Not Applicable P: Pending S: Satisfactory					
FIRE FIGHTING SYSTEM					
POS	DESCRIPTION	SAT			PENDING N°
		NA	P	S	
B.1	Visual and dimensional check			✓	
S.1	Workmanship Material, Surface defects, components and general finish			✓	
S.2	Mark tagging and conformance to packing requirements			✓	
S.3	Pneumatic test			✓	
S.4	Leakage test for storage cylinders			✓	
S.5	Operation / pressure test (manifold pressure switch)			✓	
S.6	Electrical control head and components wiring check			✓	
S.7	Simulation test			✓	
S.7	Room Integrity test		✓		
Enppi Representative		Cear Representative		Date	
				P.P.C. Date M.OMOR	
REMARKS <i>Room integrity test was not tested</i>					

M. boud
27/7/2021

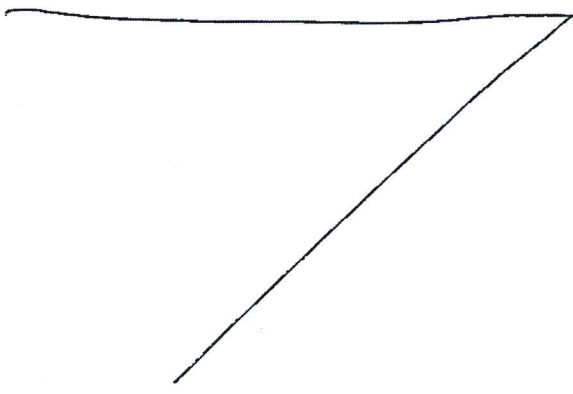
System ID	030-EL-017
System Description	Electrical Power Module-1 System

12.10- Electrical Pre-Commissioning Check Lists



**EGPC – THE EGYPTIAN GENERAL
PETROLEUM CORPORATION.**



Earthing Bus Duct continuity check			
Aim	Verify t the installation of the earthing system of the Bus Duct		
Pre-requisites	N.A.		
Test description	The installation and the material must be in compliance with the values reported on the following documents: 01251-100-S07-E99-0009 Earthing System Layout 01251-100-S07-K009-0006 EPM Bus Duct Data Sheet Supplier 01251-100-S07-K011-0006 EPM Filled in Purchaser Bus Duct Data Sheet		
Acceptance Criteria	The resistance measured shall be at least $< \Omega$.		
Instrument	Type: <u>ME6600</u> Mod.: <u>MT-620-2</u> S/N: <u>1</u> Test Certificate : <u>1</u>		
3.1.3	Value checked: <u>41</u> Ω 		
Notes			
Executed	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Result	<input checked="" type="checkbox"/> Positive <input type="checkbox"/> Negative
Date	Supplier	Customer	Client
<u>12-07-21</u>	<u>[Signature]</u>	<u>[Signature]</u>	<u>[Signature]</u>

Enppi	<u>EGPC – THE EGYPTIAN GENERAL PETROLEUM CORPORATION.</u>	 <small>EGPC Logo & Trademark 2014 v.1</small>
--------------	--	--

CRUDE OIL TANK FARM 1251-100

EPM MODULE 030-EPM1

DP-1 Indoor Distribution Panel

SAT

Commissioning and Site Integration Test Procedures

1	16/11/2020	Approval	BP	LS	GA		
0	30/10/2020	Approval	BP	LS	GA		
Rev.	Date	Issued For	Prepared	Checked	Approved	Approved	Approved
<u>Notes:</u>			EGPC – THE EGYPTIAN GENERAL PETROLEUM CO.				
			Contract Number: 1251-100-16-7				
			Enppi Ref.: 01251-100-S07-P06-0007 R.1				
			Language: E			Total Pages: 11	

This document is the property of Enppi. It must not be stored reproduced or disclosed to others without written authorization from the COMPANY





**EGPC – THE EGYPTIAN GENERAL
PETROLEUM CORPORATION.**



INDEX

INTRODUCTION SAT PROCEDURE.....	3
Aim of the Document.....	3
1.1 Personnel involved in the SAT.....	3
1.2 DOCUMENTATION.....	4
2. TESTING STRATEGY.....	4
3. INSTALLATION TESTING.....	5
3.1 Documentation check.....	5
3.2 INSTALLATION CHECK.....	6
3.3 POWER SUPPLY CHECK.....	8
4. FUNCTIONAL TESTING.....	9
4.1 Electrical equipment.....	9
5 COMMISSIONING AND START-UP PROCEDURES DP 1.....	10
5.1 Preliminary operation.....	10
5.1.1. Mechanical assembling.....	10
5.1.2 Electrical / Instrument connecting.....	10
5.1.3 Check and Test with Voltage supply.....	10
5.1.4 Test the circuit one by one and not at the same time.....	11

	<u>EGPC – THE EGYPTIAN GENERAL PETROLEUM CORPORATION.</u>	
---	--	---

INTRODUCTION SAT PROCEDURE

Aim of the document.

This document is the FAT, Functional & Performance Test for the Indoor DP-1 Distribution Panel of the EPM electrical Power Module

The document is the acceptance protocol concerning the characteristics of the supplied DP-1 Panel

Definition:

Supplier: CEAR

Customer: ENPPI

Client: PPC

1.1 Personnel involved in the SAT

The table below shows the people who participate at the activity of the SAT (Commissioning and SAT Integration Test) the present people must sign next to their name.

CEAR and ENPPI can use an external Inspector / Agency or third-party Body.

Name and Surname	Company/Position	Signature	Date
<i>Ahmed Abdelhakem</i>	ENPPI	<i>A. Abdelhakem</i>	17/7/2021
<i>M. Darwish</i>	PPC	<i>M. Darwish</i>	17/7/2021
<i>COM COTTURE PAB 12</i>	CEAR	<i>COM COTTURE</i>	17-07-21
	CEAR		

	<p align="center"><u>EGPC – THE EGYPTIAN GENERAL PETROLEUM CORPORATION.</u></p>	
---	--	---

1.2 DOCUMENTATION

Following a list of the relevant documents used to perform the FAT (please fill the table with the last revision number of the documents used).

Document No.	Rev.	Description
01251-100-S07-B01-0001	R.7	General Arrangement
01251-100-S07-E02-0002	R.4	Indoor Light Distribution Panel Overall Dimensions Panel Layout
01251-100-S07-E10-0002	R.4	Indoor Panel Single & Wiring diagram.
01251-100-S07-K11-0007	R.4	EPM Filled in DP-1 Indoor Distribution Panel Data Sheet
01251-100-S07-E05-0002	R.5	EPM Internal Cable schedule

2. TESTING STRATEGY



The testing strategy includes the following two phases.

The Installation testing phase is developed to test the:

- Documentation;
- Mechanical installation;
- Electrical installation.

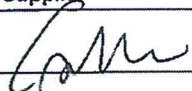


The Functioning testing phase is developed to test the functioning of the:



- Electrical equipment;

	EGPC - THE EGYPTIAN GENERAL PETROLEUM CORPORATION.	
---	---	---

3. INSTALLATION TESTING

3.1 Documentation check.



3.1	Documentation check.			
	Aim	Check the presence of the project documentation.		
	Pre-requisites	N.A.		
	Test description	Check the presence and the state of the documentation listed on chapter 1.2 of the FAT procedure.		
	Acceptance criteria	All the documentation listed on chapter 1.2 of the FAT procedure have to be present.		
	Notes			
	Executed	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Result	<input checked="" type="checkbox"/> Positive <input type="checkbox"/> Negative
	Date	Supplier	Customer	Client
	17-07-2017			

	EGPC – THE EGYPTIAN GENERAL PETROLEUM CORPORATION.	
---	---	---



3.2 INSTALLATION CHECK

3.2.1	DP-1 Indoor Distribution Panel			
	Aim	Check the DP-1 identification label.		
	Pre-requisites	N.A.		
	Test description	Visual inspection.		
	Acceptance criteria	The DP-1 identification label must be in compliance with the following documents: 01251-100-S07-E10-0002 Indoor Panel Single Line Diagram 01251-100-S07-E02-0002 Indoor Overall Dimension Panel Layout		
	Instrument	N.A.		
	Notes			
	Executed	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Result	<input checked="" type="checkbox"/> Positive <input type="checkbox"/> Negative
	Date	Supplier	Customer	Client
	17-07-21	Com	A. Abdel	R. M.

3.2.2	DP-1 Indoor Distribution Panel Front lay-out			
	Aim	Check the front DP-1 layout.		
	Pre-requisites	N.A.		
	Test description	Visual inspection.		
	Acceptance criteria	The front layout must be in compliance with the following documents: 01251-100-S07-E10-0002 Indoor Panel Single Line Diagram 01251-100-S07-E02-0002 Indoor Overall Dimension Panel Layout.		
	Instrument	N.A.		
	Notes			
	Executed	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Result	<input checked="" type="checkbox"/> Positive <input type="checkbox"/> Negative
	Date	Supplier	Customer	Client
	17-07-21	Com	A. Abdel	R. M.

	<p align="center">EGPC – THE EGYPTIAN GENERAL PETROLEUM CORPORATION.</p>	
---	---	---



3.2.3	Mechanical and electrical interlocks, door and isolating handle interlocks, key interlocks, etc.			
	Aim	Check the functioning of the mechanical and electrical interlocks, door and isolating handle interlocks, key interlocks, etc..		
	Pre-requisites	N.A.		
	Test description	Functional test of all the mechanical and electrical interlocks.		
	Acceptance criteria	All the mechanical and electrical interlocks described on the following documents must be operative: The DP-1arrangement must be in compliance with the following documents: 01251-100-S07-E10-0004 UPS Single Line Diagram 01251-100-S07-E02-0002 Indoor Overall Dimension Panel Layout		
	Instrument	N.A.		
	Notes			
	Executed	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Result	<input checked="" type="checkbox"/> Positive <input type="checkbox"/> Negative
Date	Supplier	Customer	Client	
17-07-20	[Signature]	[Signature]	[Signature]	

	EGPC – THE EGYPTIAN GENERAL PETROLEUM CORPORATION.	
---	---	---

3.3 POWER SUPPLY CHECK

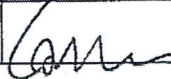
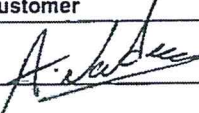
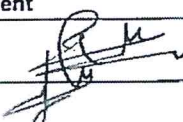
3.3.1	Main circuits Power supply			
	Aim	Check the main circuits power supply.		
	Pre-requisites	N.A.		
	Test description	Check the presence and the value of the main power supply voltage.		
	Acceptance criteria	The main circuits power supply voltage should be 400V 3P+N 50Hz.		
	Instrument	Type: <u>HT 1100A</u> Mod.: <u>HT 3100</u> S/N: <u>88600509</u> Test Certificate: <u>7564</u>		
	Measured voltage	Value	<u>400V</u>	Frequency <u>50 Hz</u>
	Notes			
	Executed	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Result	<input checked="" type="checkbox"/> Positive <input type="checkbox"/> Negative
	Date	Supplier	Customer	Client
	<u>17-07-21</u>	<u>[Signature]</u>	<u>[Signature]</u>	

3.3.2	Auxiliary circuits Power supply			
	Aim	Check the auxiliary circuits power supply.		
	Pre-requisites	N.A.		
	Test description	Check the presence and the value of the auxiliary power supply voltage.		
	Acceptance criteria	The auxiliary circuits power supply voltage should be 230V 1P+N 50Hz.		
	Instrument	Type: <u>HT 1100A</u> Mod.: <u>HT 3100</u> S/N: <u>88600509</u> Test Certificate: <u>7564</u>		
	Measured voltage	Value	<u>230V</u>	Frequency <u>50 Hz</u>
	Notes			
	Executed	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Result	<input checked="" type="checkbox"/> Positive <input type="checkbox"/> Negative
	Date	Supplier	Customer	Client
	<u>17-07-21</u>	<u>[Signature]</u>	<u>[Signature]</u>	

	EGPC – THE EGYPTIAN GENERAL PETROLEUM CORPORATION.	 <small>EGPC EGYPTIAN GENERAL PETROLEUM CORPORATION</small>
---	---	---

4. FUNCTIONAL TESTING.

4.1 Electrical equipment.

4.1	DP-1 operating conditions.			
	Aim	Check the functioning of the DP-1		
	Pre-requisites	N.A.		
	Test description	Check the circuit breaker, signal lamps and verify the output distribution		
	Acceptance criteria	The electrical functioning of the DP-1 must be in compliance with the following document: 01251-100-S07-E10-0002 Indoor Panel Single & Wiring Diagram		
	Notes			
	Executed	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Result	<input checked="" type="checkbox"/> Positive <input type="checkbox"/> Negative
Date	Supplier	Customer	Client	
	17-07-21			

5 COMMISSIONING AND START-UP PROCEDURES DP 1 INDOOR PANEL

5.1 Preliminary operation

Before starting-up the electrical and instrumentation commissioning of Indoor Power Distribution Panel all the lighting circuit will be terminated and all the followings point should be checked and confirmed:

The indoor provide supply the internal EPM circuit and 230V 50 Hz internal and external socket.

Each circuit is controlled by the relevant circuit breaker.

5.1.1. Mechanical assembling

	Check equipment's alignment	<input checked="" type="checkbox"/>
	Check all bolts fixing	<input checked="" type="checkbox"/>

5.1.2 Electrical / Instrument connecting

	Check cabling connection	<input checked="" type="checkbox"/>
	Check insulated test of cabling system before energizing on the outgoing	<input checked="" type="checkbox"/>

After confirmation, the distribution Panel is ready for electrical test without voltage supply

Field test check

Check and Test without voltage supply

Before energising the system, all the followings point should be checked and confirmed:

	Check earthing system connection from the external grounding system to the Indoor Power Distribution Panel ground bar (PE bar).	<input checked="" type="checkbox"/>
	Check and/or set all electrical protection as per the wiring diagram	<input checked="" type="checkbox"/>

After confirmation, the Indoor Power Distribution Panel is ready for electrical and instrument test with power supply.

5.1.3 Check and Test with Voltage supply

Before energizing the indoor panel, all breaker must be open.

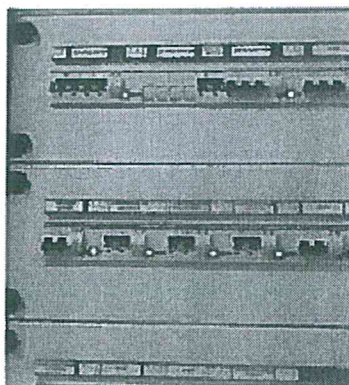
The indoor panel DP 1 is provided with the following measuring control (see picture):



- Main circuit breaker
- Ammeter and relevant ammeter switch
- Voltmeter and relevant voltmeter switch

5.1.4 Test the circuit one by one and not at the same time in order to check correctly



Each lighting circuit is controlled by the relevant switch breaker, each breaker is equipped with 3 signal lamps green "OFF", red "ON", yellow "FAULT".



The next description includes the action for each section step by step.
For the function of each circuit breaker (Refer to the 01251-100-S07-E10-0002-Indoor Panel Single Line and Wiring Diagram)

The operation is the following:

Check the voltage supply on the 3 P+N on the Voltmeter PV1 by the voltmeter switch SV 1 close the fuse switch QU1.1
Check by the Lamp Test SB1 the correct function of the signal lamp Close the breaker QF1.1 and supply the aux. transformer for signal lamp.
By the signal lamp HL1.1/2.1/3.1 check the status of main circuit breaker
Close the main breaker QF1 to supply all circuit breaker Closed the breaker QF0 for pilot circuit emergency light
Close the Circuit Breaker QF2 to QF12 step by step to supply circuit and check the output voltage by voltmeter. For Each circuit breaker are provided the following signal lamp: -Red Lamp Circuit breaker close -Green Lamp Circuit breaker open -Yellow Lamp Fault

	<u>EGPC – THE EGYPTIAN GENERAL PETROLEUM CORPORATION.</u>	
---	--	---

CRUDE OIL TANK FARM 1251-100



EPM MODULE 030-EPM1

DP-2 Outdoor Distribution Panel

SAT


Commissioning and Site Integration Test Procedures

1	16/11/2020	Approval	BP	LS	GA		
0	30/10/2020	Approval	BP	LS	GA		
Rev	Date	Issued For	Prepared	Checked	Approved	Approved	Approved
<u>Notes:</u>			EGPC – THE EGYPTIAN GENERAL PETROLEUM CO.				
			Contract Number: 1251-100-500-16				
			Enppi Ref.: 01251-100-S07-P06-0008 R.1				
					Language: E		Total Pages: 13
This document is the property of Enppi It must not be stored reproduced or disclosed to others without written authorization from the COMPANYY							

	<p align="center">EGPC – THE EGYPTIAN GENERAL PETROLEUM CORPORATION.</p>	
---	---	---

INDEX

INTRODUCTION SAT PROCEDURE.....	3
Aim of the document.....	3
1.1 Personnel involved in the SAT.....	3
1.2 DOCUMENTATION.....	4
2. TESTING STRATEGY.....	4
3. INSTALLATION TESTING.....	5
3.1 Documentation check.	5
3.2 General construction Check.....	6
3.3 Power supply Check.	9
4. FUNCTIONAL TESTING.....	10
4.1 Electrical equipment.	10
5 COMMISSIONING AND START-UP PROCEDURES DP 2 OUTDOOR PANEL.....	11
5.1 Preliminary operation.....	11
5.1.1. Mechanical assembling	11
5.1.2 Electrical / Instrument connecting	11
5.1.3 Check and Test with Voltage supply	11
5.1.4 Test the circuit one by one and not at the same time in order to check	12
correctly	12

Enppi	<u>EGPC - THE EGYPTIAN GENERAL PETROLEUM CORPORATION.</u>	 <small>CEAR - EGYPTIAN ELECTRICITY COMPANY</small>
--------------	--	---

INTRODUCTION SAT PROCEDURE

Aim of the document.

This document is the FAT, Functional & Performance Test for the Outdoor DP-2 Distribution Panel of the EPM electrical Power Module

The document is the acceptance protocol concerning the characteristics of the supplied DP-2 Panel

Definition:

Supplier: CEAR

Customer: ENPPI



Client: PPC

1.1 Personnel involved in the SAT

The table below shows the people who participate at the activity of the SAT (Commissioning and Site Integration Test Procedures): the present people must sign next to their name.

CEAR and ENPPI can use an external Inspector / Agency or third-party Body.

Name and Surname	Company/Position	Signature	Date
Ahmed Elchadani	ENPPI		17/7/2021
M. Ibrahim	PPC		17/7/2021
Corrado Cottarelli FABIO	CEAR		17-07-21
	CEAR		

	<p align="center"><u>EGPC – THE EGYPTIAN GENERAL PETROLEUM CORPORATION.</u></p>	
---	--	---

1.2 DOCUMENTATION

Following a list of the relevant documents used to perform the FAT (please fill the table with the last revision number of the documents used).

Document No.	Rev.	Description
01251-100-S07-B01-0001		General Arrangement
01251-100-S07-E02-0003		Outdoor Light Distribution Panel Overall Dimensions Panel Layout
01251-100-S07-E10-0003		Outdoor Panel Single & Wiring diagram.
01251-100-S07-K11-0008		EPM Filled in DP-2 Outdoor Distribution Panel Data Sheet
01251-100-S07-E05-0002		EPM Internal Cable schedule

2. TESTING STRATEGY



The testing strategy includes the following two phases.

The Installation testing phase is developed to test the:

- Documentation;
- Mechanical installation;
- Electrical installation.

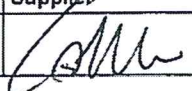
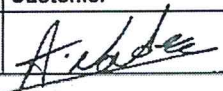

The Functioning testing phase is developed to test the functioning of the:

- Electrical equipment

	EGPC – THE EGYPTIAN GENERAL PETROLEUM CORPORATION.	
---	---	---

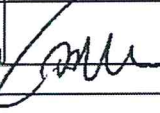


3. INSTALLATION TESTING.

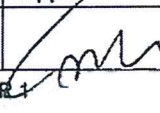
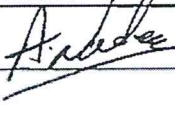
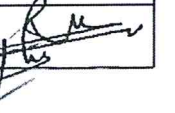
3.1 Documentation check.

3.1	Documentation check.			
	Aim	Check the presence of the project documentation.		
	Pre-requisites	N.A.		
	Test description	Check the presence and the state of the documentation listed on chapter 1.2 of the FAT procedure.		
	Acceptance criteria	All the documentation listed on chapter 1.2 of the FAT procedure have to be present.		
	Notes			
	Executed	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Result	<input checked="" type="checkbox"/> Positive <input type="checkbox"/> Negative
	Date	Supplier	Customer	Client
	17-07-21			

	EGPC – THE EGYPTIAN GENERAL PETROLEUM CORPORATION.	 <small>EGPC – THE EGYPTIAN GENERAL PETROLEUM CORPORATION</small>
---	---	---

3.2 General construction Check

3.2.1	Terminal block connections.			
	Aim	Check the terminal block connections (wiring and tightening).		
	Pre-requisites	N.A.		
	Test description	Visual inspection and tightening test (with a screw driver).		
	Acceptance criteria	The terminal block connections must be in compliance with the following documents: 01251-100-S07-E10-0003 Outdoor Panel Single & Wiring Diagram 01251-100-S07-E02-0003 Outdoor DP-2 Overall Dimension Panel Layout		
	Instrument	Screw driver.		
	Notes			
	Executed	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Result	<input checked="" type="checkbox"/> Positive <input type="checkbox"/> Negative
Date	Supplier	Customer	Client	
	17-07-21			

3.2.2	Earthing connections.			
	Aim	Check the earthing connections (wiring and tightening).		
	Pre-requisites	N.A.		
	Test description	Visual inspection and tightening test (with a screw driver or a wrench).		
	Acceptance criteria	The earthing connections must be in compliance with the following documents: 01251-100-S07-E10-0003 Outdoor Panel Single & Wiring Diagram 01251-100-S07-E99-0009 Earthing System Internal External Layout		
	Instrument	Screw driver, Wrench.		
	Notes			
	Executed	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Result	<input checked="" type="checkbox"/> Positive <input type="checkbox"/> Negative
Date	Supplier	Customer	Client	
	17-07-21			



**EGPC – THE EGYPTIAN GENERAL
PETROLEUM CORPORATION.**



Electrical equipment labels.				
3.2.3	Aim	Check the equipment labels.		
	Pre-requisites	N.A.		
	Test description	Visual inspection.		
	Acceptance criteria	The electrical equipment labels must be in compliance with the following document: 01251-100-S07-E02-0002 Indoor Overall Dimension Panel Layout		
	Instrument	N.A.		
	Notes			
	Executed	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Result	<input checked="" type="checkbox"/> Positive <input type="checkbox"/> Negative
	Date	Supplier	Customer	Client
17-07-21	<i>[Signature]</i>	<i>[Signature]</i>	<i>[Signature]</i>	



DP-2 Cleanliness of the equipment				
3.2.4	Aim	Check the cleanliness of the equipment.		
	Pre-requisites	N.A.		
	Test description	Visual inspection.		
	Acceptance criteria			
	Instrument	N.A.		
	Notes			
	Executed	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Result	<input checked="" type="checkbox"/> Positive <input type="checkbox"/> Negative
	Date	Supplier	Customer	Client
17-07-21	<i>[Signature]</i>	<i>[Signature]</i>	<i>[Signature]</i>	



**EGPC – THE EGYPTIAN GENERAL
PETROLEUM CORPORATION.**





3.2.5	Mechanical and electrical interlocks, door and isolating handle interlocks, etc.		
	Aim	Check the functioning of the mechanical and electrical interlocks, door and isolating handle interlocks, key interlocks, etc..	
	Pre-requisites	N.A.	
	Test description	Functional test of all the mechanical and electrical interlocks.	
	Acceptance criteria	All the mechanical and electrical interlocks described on the following documents must be operative: The DP-2 arrangement must be in compliance with the following documents: 01251-100-S07-E10-0003 Outdoor Panel Single & Wiring Diagram 01251-100-S07-E02-0003 Outdoor DP-2 Overall Dimension Panel Layout	
	Instrument	N.A.	
	Notes		
	Executed	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Result
Date	Supplier	Customer	Client
17-07-21			

	EGPC – THE EGYPTIAN GENERAL PETROLEUM CORPORATION.	
---	---	---

3.3 Power supply Check

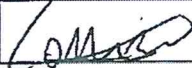
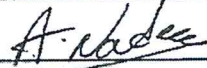
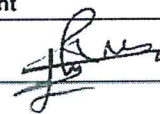
3.3.1	Main circuits Power supply			
	Aim	Check the main circuits power supply.		
	Pre-requisites	N.A.		
	Test description	Check the presence and the value of the main power supply voltage.		
	Acceptance criteria	The main circuits power supply voltage should be 400V 3P+N 50Hz.		
	Instrument	Type: <u>HT 17.344</u> Mod.: <u>HT 8700</u> S/N: <u>08.600503</u> Test Certificate: <u>2544</u>		
	Measured voltage	Value	<u>400V</u>	Frequency <u>50Hz</u>
	Notes			
	Executed	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Result	<input checked="" type="checkbox"/> Positive <input type="checkbox"/> Negative
	Date	Supplier	Customer	Client
	<u>17-07-21</u>	<u>Com</u>	<u>A. Abdel</u>	<u>[Signature]</u>

3.3.2	Auxiliary circuits Power supply			
	Aim	Check the auxiliary circuits power supply.		
	Pre-requisites	N.A.		
	Test description	Check the presence and the value of the auxiliary power supply voltage.		
	Acceptance criteria	The auxiliary circuits power supply voltage should be 230V 1P+N 50Hz.		
	Instrument	Type: <u>HT 17.344</u> Mod.: <u>HT 8700</u> S/N: <u>08.600503</u> Test Certificate: <u>2544</u>		
	Measured voltage	Value	<u>230V</u>	Frequency <u>50Hz</u>
	Notes			
	Executed	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Result	<input checked="" type="checkbox"/> Positive <input type="checkbox"/> Negative
	Date	Supplier	Customer	Client
	<u>17-07-21</u>	<u>Com</u>	<u>A. Abdel</u>	<u>[Signature]</u>

	EGPC – THE EGYPTIAN GENERAL PETROLEUM CORPORATION.	
---	---	---

4. FUNCTIONAL TESTING.

4.1 Electrical equipment.

4.1.	DP-2 operating conditions.				
	Aim	Check the functioning of the DP-2			
	Pre-requisites	N.A.			
	Test description	Check the circuit breaker, signal lamps and verify the output distribution. Check the operation of photocell and relevant contactor.			
	Acceptance criteria	The electrical functioning of the DP-2 must be in compliance with the following document: 01251-100-S07-E10-0003 Outdoor Panel Single & Wiring Diagram			
	Notes				
	Executed	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Result	<input checked="" type="checkbox"/> Positive <input type="checkbox"/> Negative	
Date	Supplier	Customer	Client		
	17-07-21				

5 COMMISSIONING AND START-UP PROCEDURES DP 2 OUTDOOR PANEL

5.1 Preliminary operation

Before starting-up the electrical and instrumentation commissioning of Outdoor Power Distribution Panel all the lighting circuit will be terminated and all the followings point should be checked and confirmed:

The outdoor panel provide supply the perimetral and roof top EPM lighting circuits and all area external lighting system installed by Enppi.
Each circuit is controlled by the relevant circuit breaker.

5.1.1. Mechanical assembling

	Check equipment's alignment	<input checked="" type="checkbox"/>
	Check all bolts fixing	<input checked="" type="checkbox"/>

5.1.2 Electrical / Instrument connecting

	Check cabling connection	<input checked="" type="checkbox"/>
	Check insulated test of cabling system before energizing on the outgoing	<input checked="" type="checkbox"/>

After confirmation, the distribution Panel is ready for electrical test without voltage supply

Field test check

Check and Test without voltage supply

Before energising the system, all the followings point should be checked and confirmed:

	Check earthing system connection from the external grounding system to the Indoor Power Distribution Panel ground bar (PE bar).	<input checked="" type="checkbox"/>
	Check and/or set all electrical protection as per the wiring diagram	<input checked="" type="checkbox"/>

After confirmation, the Indoor Power Distribution Panel is ready for electrical and instrument test with power supply.

5.1.3 Check and Test with Voltage supply

Before energizing the indoor panel, all breaker must be open.

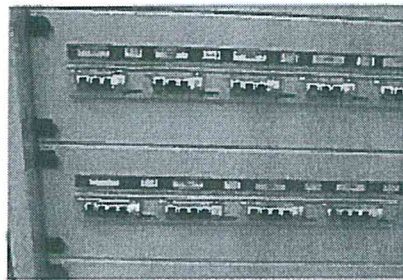
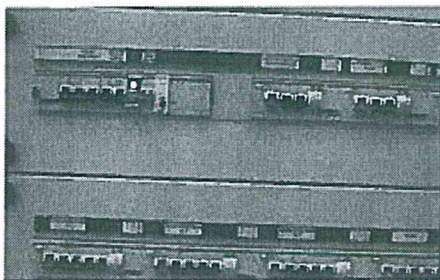
The indoor panel DP 2 is provided with the following measuring control (see picture):



- Main circuit breaker
- Ammeter and relevant ammeter switch
- Voltmeter and relevant voltmeter switch

5.1.4 Test the circuit one by one and not at the same time in order to check correctly

Each lighting circuit is controlled by the relevant switch breaker, each breaker is equipped with 3 signal lamps green "OFF", red "ON", yellow "FAULT".



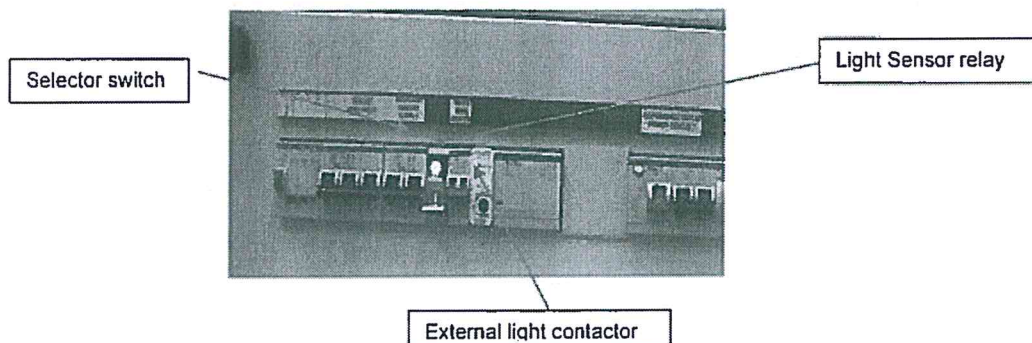
The outdoor panel is provided with the section for outdoor lighting system controlled by light sensor installed under the roof top.

This section is equipped with:

- Selector switch 3 position "Man.-O-Auto"
- Light sensor relay

In "Auto" position the lighting system is controlled by an external sensor that provide to command the contactor for external lighting system based on the daylight.

In "Manual" position the lighting system is always on, the sensor is not operated



The next description includes the action for each section step by step.

For the function of each circuit breaker (Refer to the 01251-100-S07-E10-0003 Outdoor Panel Single Line and Wiring Diagram)

The operation is the following:



**EGPC – THE EGYPTIAN GENERAL
PETROLEUM CORPORATION.**



Check the voltage supply on the 3 P+N on the Voltmeter PV1 by the voltmeter switch SV 1 close the fuse switch QU1.1
Check by the Lamp Test SB1 the correct function of the signal lamp Close the breaker QF 1.1 and supply the aux. transformer for signal lamp.
Close the Main Circuit breaker QF1
By the signal lamp HL1.1/2.1/3.1 check the status of main circuit breaker
Closed the breaker QF 0 for pilot circuit emergency light
Close the Circuit Breaker QF 3 QF 4 QF 5 step by step to supply all circuit convenience outlet sockets and check the output voltage by voltmeter. For Each circuit breaker are provided the following signal lamp: -Red Lamp Circuit breaker close -Green Lamp Circuit breaker open -Yellow Lamp Fault
Close the Circuit Breaker QF6 to QF13 step by step to supply all circuit and check the output voltage by voltmeter. For Each circuit breaker are provided the following signal lamp: -Red Lamp Circuit breaker close -Green Lamp Circuit breaker open -Yellow Lamp Fault

Enppi	<u>EGPC – THE EGYPTIAN GENERAL PETROLEUM CORPORATION.</u>	 <small>CONTRUZIONI ELETTRICHE (C.E.A.)</small>
--------------	--	---

CRUDE OIL TANK FARM 1251-100



EPM MODULE 030-EPM1

UPDP Distribution Panel

SAT

Commissioning and Site Integration Test Procedures

1	16/11/2020	Approval	BP	LS	GA		
0	30/10/2020	Approval	BP	LS	GA		
Rev.	Date	Issued For	Prepared	Checked	Approved	Approved	Approved
<u>Notes:</u>			EGPC – THE EGYPTIAN GENERAL PETROLEUM CO.				
			Contract Number: 1251-100-510-16				
			Enppi Ref.: 01251-100-S07-P06-0009 R.1				
					Language: E		Total Pages: 12
This document is the property of Enppi it must not be stored reproduced or disclosed to others without written authorization from the COMPANY							

	<p align="center"><u>EGPC – THE EGYPTIAN GENERAL PETROLEUM CORPORATION.</u></p>	
---	--	---

INDEX

INTRODUCTION SAT PROCEDURE	3
Aim of the document.....	3
1.1 Personnel involved in the SAT.....	3
1.2 DOCUMENTATION.....	4
2. TESTING STRATEGY.....	4
3.1 Documentation check.....	5
3.2 INSTALLATION CHECK.....	6
3.3 POWER SUPPLY CHECK.....	8
4. FUNCTIONAL TESTING.....	9
4.1 Electrical equipment.....	9
5 COMMISSIONING AND START-UP PROCEDURES UPS PANEL	10
5.1 Preliminary operation.....	10
5.1.1. Mechanical assembling.....	10
5.1.2 Electrical / Instrument connecting.....	10
Field test check.....	10
Check and Test without voltage supply.....	10
5.1.3 Check and Test with Voltage supply.....	11
5.1.4 Test the circuit one by one and not at the same time in order to check correctly.....	11

	<p align="center"><u>EGPC – THE EGYPTIAN GENERAL PETROLEUM CORPORATION.</u></p>	
---	--	---

INTRODUCTION SAT PROCEDURE

Aim of the document.

This document is the FAT, Functional & Performance Test for the UPS Distribution Panel of the EPM electrical Power Module

The document is the acceptance protocol concerning the characteristics of the supplied UPS Panel

Definition:

Supplier: CEAR

Customer: ENPPI



Client: PPC

1.1 Personnel involved in the SAT

The table below shows the people who participate at the activity of the SAT (Commissioning and Site Integration Test Procedures): the present people must sign next to their name.

CEAR and ENPPI can use an external Inspector / Agency or third-party Body.

Name and Surname	Company/Position	Signature	Date
<i>Ahmed Abdelmonem</i>	ENPPI	<i>Ahmed</i>	17/7/2024
<i>M. Ibrahim</i>	PPC	<i>M. Ibrahim</i>	17/7/2024
<i>Corr. Corr. Corr.</i> <i>FABUS</i>	CEAR	<i>Corr. Corr. Corr.</i>	17-07-24
	CEAR		

	<p align="center"><u>EGPC – THE EGYPTIAN GENERAL PETROLEUM CORPORATION.</u></p>	
---	--	---

1.2 DOCUMENTATION

Following a list of the relevant documents used to perform the FAT (please fill the table with the last revision number of the documents used).

Document No.	Rev.	Description
01251-100-S07-B01-0001	R.7	General Arrangement
01251-100-S07-E02-0004	R.4	UPS Panel Overall Dimensions Panel Layout
01251-100-S07-E10-0004	R.4	UPS Panel Single & Wiring diagram.
01251-100-S07-K11-0009	R.2	EPM Filled UPS Distribution Panel Data Sheet
01251-100-S07-E05-0002	R.5	EPM Internal Cable schedule

2. TESTING STRATEGY



The testing strategy includes the following two phases.

The Installation testing phase is developed to test the:

- Documentation;
- Mechanical installation ;
- Electrical installation.

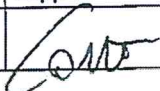
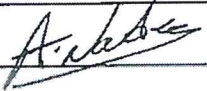

The Functioning testing phase is developed to test the functioning of the:

- Electrical equipment

	EGPC – THE EGYPTIAN GENERAL PETROLEUM CORPORATION.	
---	---	---

3. INSTALLATION TESTING.

3.1 Documentation check.

3.1	Documentation check.			
	Aim	Check the presence of the project documentation.		
	Pre-requisites	N.A.		
	Test description	Check the presence and the state of the documentation listed on chapter 1.2 of the FAT procedure.		
	Acceptance criteria	All the documentation listed on chapter 1.2 of the FAT procedure have to be present.		
	Notes			
	Executed	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Result	<input checked="" type="checkbox"/> Positive <input type="checkbox"/> Negative
	Date	Supplier	Customer	Client
	17-07-21			

	<p align="center">EGPC – THE EGYPTIAN GENERAL PETROLEUM CORPORATION.</p>	
---	---	---



3.2 INSTALLATION CHECK

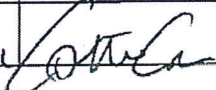
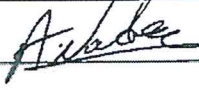
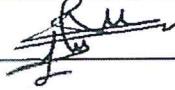
3.2.1	Earthing connections.			
	Aim	Check the earthing connections (wiring and tightening).		
	Pre-requisites	N.A.		
	Test description	Visual inspection and tightening test (with a screw driver or a wrench).		
	Acceptance criteria	The earthing connections must be in compliance with the following documents: 01251-100-S07-E10-0004 UPS Single & Wiring Diagram 01251-100-S07-E99-0009 Earthing System Internal External Layout		
	Instrument	Screw driver, Wrench.		
	Notes			
	Executed	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Result	<input checked="" type="checkbox"/> Positive <input type="checkbox"/> Negative
	Date	Supplier	Customer	Client

17-07-2017 *[Signature]* *[Signature]* *[Signature]*

3.2.2	UPS Cleanliness of the equipment			
	Aim	Check the cleanliness of the equipment.		
	Pre-requisites	N.A.		
	Test description	Visual inspection.		
	Acceptance criteria			
	Instrument	N.A.		
	Notes			
	Executed	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Result	<input checked="" type="checkbox"/> Positive <input type="checkbox"/> Negative
	Date	Supplier	Customer	Client

17-07-2017 *[Signature]* *[Signature]* *[Signature]*

	EGPC – THE EGYPTIAN GENERAL PETROLEUM CORPORATION.	
---	---	---

3.2.3	Mechanical and electrical interlocks, door and isolating handle interlocks, key interlocks, etc..			
	Aim	Check the functioning of the mechanical and electrical interlocks, door and isolating handle interlocks, key interlocks, etc..		
	Pre-requisites	N.A.		
	Test description	Functional test of all the mechanical and electrical interlocks.		
	Acceptance criteria	All the mechanical and electrical interlocks described on the following documents must be operative: The UPS arrangement must be in compliance with the following documents: 01251-100-S07-E10-0004 UPS Single & Wiring Diagram 01251-100-S07-E02-0004 UPS Overall Dimension Panel Layout		
	Instrument	N.A.		
	Notes			
	Executed	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Result	<input checked="" type="checkbox"/> Positive <input type="checkbox"/> Negative
Date	Supplier	Customer	Client	
17-07-21				

PRE-COMMISSIONING CHECK LIST GASEOUS FIRE EXTINGUISHING SYSTEM LP-05 A

PROJECT TITLE : EDPCCrude Oil Tank Farms Priject, Agrood Area 30 (Module-01)

PROJECT NUMBER : 1251-100

DISCIPLINE : Loss Prevention

SYSTEM NAME : Electrical Power Module-1 System

SYSTEM ID : 030-EL-017

SUB-SYSTEM NAME : Electrical Power Module-1 System

SUB-SYSTEM ID : 030-EL-017

ITEM TAG No. : 030XS007

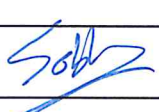
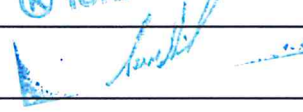
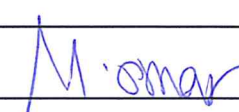
AREA : 30

REF. DWGs/DOCs :

No.	DESCRIPTION	RESULT	PL
		OK/NA/PL	ITEM No.
1	Check that the piping is installed as per design drawings. i.e. length, size,...etc	✓	
2	Check that the nozzle is properly oriented.	✓	
3	Check that the detection device is in proper location.	✓	
4	Check that the detection device model number as per data sheet.	✓	
5	Check the manual station is properly installed and accessible.	✓	
6	Check all detectors and devices with proper tags.	✓	
7	Check the abort switch is deadman type.	✓	
8	Check that the control unit is properly installed.	✓	
9	Check the control panel wiring termination as per supplier drawings.	✓	
10	Check the control panel is properly identified.	✓	
11	Check the agent container location in correct position.	✓	

REMARKS AND OBSERVATIONS :

OK: NO OBJECTION, NA: NOT APPLICABLE, PL: PUNCH LIST.

COMPANY	CONST. CONTRACTOR	ENPPI	CUSTOMER
NAME		@ Islam Sherif	
SIGNATURE			
DATE			

PRE-COMMISSIONING CHECK LIST GASEOUS FIRE EXTINGUISHING SYSTEM LP-05 A

PROJECT TITLE : EDPCCrude Oil Tank Farms Piject, Agrood Area 30 (Module-01)

PROJECT NUMBER : 1251-100

DISCIPLINE : Loss Prevention

SYSTEM NAME : Electrical Power Module-1 System

SYSTEM ID : 030-EL-017

SUB-SYSTEM NAME : Electrical Power Module-1 System

SUB-SYSTEM ID : 030-EL-017

ITEM TAG No. : 030XS007


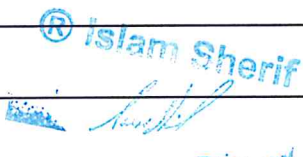
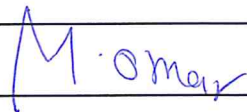
AREA : 30

REF. DWGs/DOCs :

No.	DESCRIPTION	RESULT	PL
		OK/NA/PL	ITEM No.
12	Check the agent container are fastened.	✓	
13	Check the container filling arrow pointed to green area.	N/A	
14	Check the non retuen valve orientation.	N/A	
15	Check the flexible hose installation.	✓	
16	Check the abort switch is deadman type.	✓	
17	Check wiring is properly installed as per drawing.	✓	
18	Check the power supplied for control unit from separate dedicated source.	✓	

REMARKS AND OBSERVATIONS :

OK: NO OBJECTION, NA: NOT APPLICABLE, PL: PUNCH LIST.

COMPANY	CONST. CONTRACTOR	ENPPI	CUSTOMER
NAME			
SIGNATURE			
DATE			

PRE-COMMISSIONING CHECK LIST MEDIUM VOLTAGE CABLES EL-31 A

PROJECT TITLE : EDPCCrude Oil Tank Farms Priject, Agrood Area 30 (Module-01)

PROJECT NUMBER : 1251-100

DISCIPLINE : Electrical

SYSTEM NAME : Electrical Power Module-1 System

SYSTEM ID : 030-EL-017

SUB-SYSTEM NAME : Electrical Power Module-1 System

SUB-SYSTEM ID : 030-EL-017

ITEM TAG No. : P-030-EPM1-TR-1


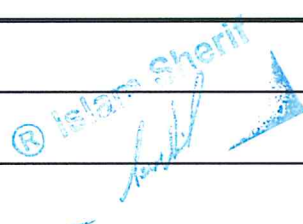

AREA : 30

REF. DWGs/DOCs :

No.	DESCRIPTION	RESULT	PL
		OK/NA/PL	ITEM No.
1	Construction punch list to be checked.	✓	
2	Check cables are correctly fixed to trays and supports.	✓	
3	Check cables through walls or ceilings are correctly sealed.	✓	
4	Check that all cables are installed in accordance with cable lists and approved documents.	✓	
5	Check identification tags of all conductors and wires.	✓	
6	Check connection, termination and joints of cables are correctly executed.	✓	
7	Inspect cables for jacket damage.	✓	
8	Ensure that the correct size and type of crimping lugs have been used.	✓	
9	Check that the bending radius of cables is not less than the minimum established.	✓	
10	Cable markers to be installed before covering buried cables or cables in cable trays.	✓	
11	Tie wraps to be used for cable and wires fixation.	✓	

REMARKS AND OBSERVATIONS :

OK: NO OBJECTION, NA: NOT APPLICABLE, PL: PUNCH LIST.

COMPANY	CONST. CONTRACTOR	ENPPI	CUSTOMER
NAME			
SIGNATURE			
DATE			

PRE-COMMISSIONING CHECK LIST MEDIUM VOLTAGE CABLES EL-31 A

PROJECT TITLE : EDPCCrude Oil Tank Farms Priject, Agrood Area 30 (Module-01)

PROJECT NUMBER : 1251-100

DISCIPLINE : Electrical

SYSTEM NAME : Electrical Power Module-1 System

SYSTEM ID : 030-EL-017

SUB-SYSTEM NAME : Electrical Power Module-1 System

SUB-SYSTEM ID : 030-EL-017

ITEM TAG No. : P-030-EPM1-TR-1



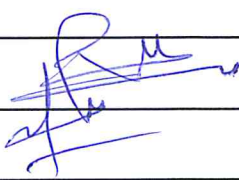
AREA : 30

REF. DWGs/DOCs :

No.	DESCRIPTION	RESULT	PL
		OK/NA/PL	ITEM No.
12	Trench markers to be checked w.r.t approved documents.	—	
13	Check cable glands for tightness and check the correct type of gland has been used for the size and type of installed cables.	—	
14	Inspect cable laid in trenches, segregation and protection.	—	
15	Cables to be tested (continuity/insulation resistance).(*)	—	
16	Equipment test report and inspection certificate to be-checked.	✓	
17	Check availability of vendor documents, including commissioning and start-up instructions. (If Any)	N/A	
18	Calibration test certificate of testing equipment to be checked.	✓	

REMARKS AND OBSERVATIONS :

OK: NO OBJECTION, NA: NOT APPLICABLE, PL: PUNCH LIST.

COMPANY	CONST. CONTRACTOR	ENPPI	CUSTOMER
NAME			
SIGNATURE			
DATE			

PRE-COMMISSIONING CHECK LIST MEDIUM VOLTAGE CABLES EL-31 A

INSULATION TEST

EL-31 A

CABLE VOLTAGE LEVEL	D.C TEST VOLTAGE	MINIMUM INSULATION RESISTANCE (M.OHMS).
3.3kV	2500V	200
6.6kV & Above	5000V	200

TABLE [I]

NOTES:

PRE-COMMISSIONING CHECK LIST MEDIUM VOLTAGE CABLES EL-31 A

PROJECT TITLE : EDPCCrude Oil Tank Farms Priject, Agrood Area 30 (Module-01)

PROJECT NUMBER : 1251-100

DISCIPLINE : Electrical

SYSTEM NAME : Electrical Power Module-1 System

SYSTEM ID : 030-EL-017

SUB-SYSTEM NAME : Electrical Power Module-1 System

SUB-SYSTEM ID : 030-EL-017

ITEM TAG No. : C-030-EPM1-LVSWG


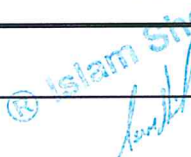
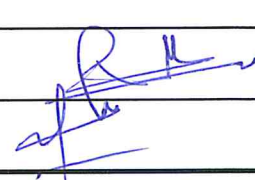
AREA : 30

REF. DWGs/DOCs :

No.	DESCRIPTION	RESULT	PL
		OK/NA/PL	ITEM No.
1	Construction punch list to be checked.	✓	
2	Check cables are correctly fixed to trays and supports.	✓	
3	Check cables through walls or ceilings are correctly sealed.	✓	
4	Check that all cables are installed in accordance with cable lists and approved documents.	✓	
5	Check identification tags of all conductors and wires.	✓	
6	Check connection, termination and joints of cables are correctly executed.	✓	
7	Inspect cables for jacket damage.	✓	
8	Ensure that the correct size and type of crimping lugs have been used.	✓	
9	Check that the bending radius of cables is not less than the minimum established.	✓	
10	Cable markers to be installed before covering buried cables or cables in cable trays.	✓	
11	Tie wraps to be used for cable and wires fixation.	✓	

REMARKS AND OBSERVATIONS :

OK: NO OBJECTION, NA: NOT APPLICABLE, PL: PUNCH LIST.

COMPANY	CONST. CONTRACTOR	ENPPI	CUSTOMER
NAME			
SIGNATURE			
DATE			

PRE-COMMISSIONING CHECK LIST MEDIUM VOLTAGE CABLES EL-31 A

PROJECT TITLE : EDPCCrude Oil Tank Farms Priject, Agrood Area 30 (Module-01)

PROJECT NUMBER : 1251-100

DISCIPLINE : Electrical

SYSTEM NAME : Electrical Power Module-1 System

SYSTEM ID : 030-EL-017

SUB-SYSTEM NAME : Electrical Power Module-1 System

SUB-SYSTEM ID : 030-EL-017

ITEM TAG No. : C-030-EPM1-LVSWG

AREA : 30

REF. DWGs/DOCs :

No.	DESCRIPTION	RESULT	PL
		OK/NA/PL	ITEM No.
12	Trench markers to be checked w.r.t approved documents.	✓	
13	Check cable glands for tightness and check the correct type of gland has been used for the size and type of installed cables.	✓	
14	Inspect cable laid in trenches, segregation and protection.	✓	
15	Cables to be tested (continuity/insulation resistance).(*)	✓	
16	Equipment test report and inspection certificate to be-checked.	✓	
17	Check availability of vendor documents, including commissioning and start-up instructions. (If Any)	N/A	
18	Calibration test certificate of testing equipment to be checked.	✓	

REMARKS AND OBSERVATIONS :

OK: NO OBJECTION, NA: NOT APPLICABLE, PL: PUNCH LIST.

COMPANY	CONST. CONTRACTOR	ENPPI	CUSTOMER
NAME			
SIGNATURE			
DATE			

PRE-COMMISSIONING CHECK LIST MEDIUM VOLTAGE CABLES EL-31 A

INSULATION TEST

EL-31 A

CABLE VOLTAGE LEVEL	D.C TEST VOLTAGE	MINIMUM INSULATION RESISTANCE (M.OHMS).
3.3kV	2500V	200
6.6kV & Above	5000V	200

TABLE [I]

NOTES:

PRE-COMMISSIONING CHECK LIST MEDIUM VOLTAGE CABLES EL-31 A

PROJECT TITLE : EDPCCrude Oil Tank Farms Priject, Agrood Area 30 (Module-01)

PROJECT NUMBER : 1251-100

DISCIPLINE : Electrical

SYSTEM NAME : Electrical Power Module-1 System

SYSTEM ID : 030-EL-017

SUB-SYSTEM NAME : Electrical Power Module-1 System

SUB-SYSTEM ID : 030-EL-017

ITEM TAG No. : P-030-EPM1-UPDP-1


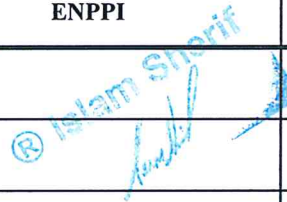
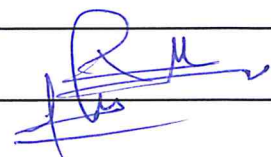
AREA : 30

REF. DWGs/DOCs :

No.	DESCRIPTION	RESULT	PL
		OK/NA/PL	ITEM No.
1	Construction punch list to be checked.	✓	
2	Check cables are correctly fixed to trays and supports.	✓	
3	Check cables through walls or ceilings are correctly sealed.	✓	
4	Check that all cables are installed in accordance with cable lists and approved documents.	✓	
5	Check identification tags of all conductors and wires.	✓	
6	Check connection, termination and joints of cables are correctly executed.	✓	
7	Inspect cables for jacket damage.	✓	
8	Ensure that the correct size and type of crimping lugs have been used.	✓	
9	Check that the bending radius of cables is not less than the minimum established.	✓	
10	Cable markers to be installed before covering buried cables or cables in cable trays.	✓	
11	Tie wraps to be used for cable and wires fixation.	✓	

REMARKS AND OBSERVATIONS :

OK: NO OBJECTION, NA: NOT APPLICABLE, PL: PUNCH LIST.

COMPANY	CONST. CONTRACTOR	ENPPI	CUSTOMER
NAME			
SIGNATURE			
DATE			

PRE-COMMISSIONING CHECK LIST MEDIUM VOLTAGE CABLES EL-31 A

PROJECT TITLE : EDPCCrude Oil Tank Farms Priject, Agrood Area 30 (Module-01)

PROJECT NUMBER : 1251-100

DISCIPLINE : Electrical

SYSTEM NAME : Electrical Power Module-1 System

SYSTEM ID : 030-EL-017

SUB-SYSTEM NAME : Electrical Power Module-1 System

SUB-SYSTEM ID : 030-EL-017

ITEM TAG No. : P-030-EPM1-UPDP-1




AREA : 30

REF. DWGs/DOCs :

No.	DESCRIPTION	RESULT	PL
		OK/NA/PL	ITEM No.
12	Trench markers to be checked w.r.t approved documents.	✓	
13	Check cable glands for tightness and check the correct type of gland has been used for the size and type of installed cables.	✓	
14	Inspect cable laid in trenches, segregation and protection.	✓	
15	Cables to be tested (continuity/insulation resistance).(*)	✓	
16	Equipment test report and inspection certificate to be-checked.	✓	
17	Check availability of vendor documents, including commissioning and start-up instructions. (If Any)	N/A	
18	Calibration test certificate of testing equipment to be checked.	✓	

REMARKS AND OBSERVATIONS :

OK: NO OBJECTION, NA: NOT APPLICABLE, PL: PUNCH LIST.

COMPANY	CONST. CONTRACTOR	ENPPI	CUSTOMER
NAME			
SIGNATURE			
DATE			

PRE-COMMISSIONING CHECK LIST MEDIUM VOLTAGE CABLES EL-31 A

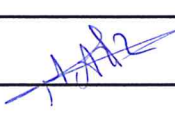
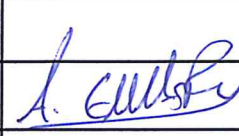
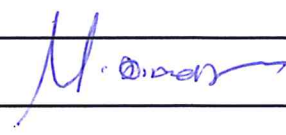
INSULATION TEST


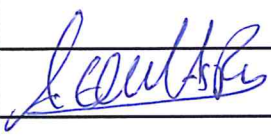
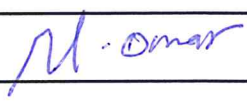
EL-31 A

CABLE VOLTAGE LEVEL	D.C TEST VOLTAGE	MINIMUM INSULATION RESISTANCE (M.OHMS).
3.3kV	2500V	200
6.6kV & Above	5000V	200


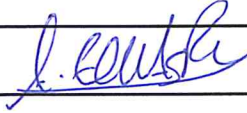
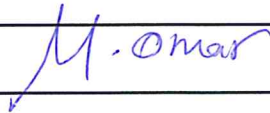
TABLE [I]

NOTES:

PRE-COMMISSIONING CHECK LIST GASEOUS FIRE EXTINGUISHING SYSTEM LP-05 A			
PROJECT TITLE : EGPC Crude Oil Tank Farms Project, Agrood Area 30 (Module-01)			
PROJECT NUMBER : 1251-100		DISCIPLINE : Loss Prevention	
SYSTEM NAME : Electrical Power Module-1 System		SYSTEM ID : 030-EL-017	
SUB-SYSTEM NAME : Electrical Power Module-1 System		SUB-SYSTEM ID : 030-EL-017	
ITEM TAG No. : 030XA029		AREA : 30	
REF. DWGs/DOCs : 030XA029			
No.	DESCRIPTION	RESULT OK/NA/PL	PL ITEM No.
1	Check that the piping is installed as per design drawings. i.e. length, size,...etc	NA	
2	Check that the nozzle is properly oriented.	NA	
3	Check that the detection device is in proper location.	NA	
4	Check that the detection device model number as per data sheet.	NA	
5	Check the manual station is properly installed and accessible.	NA	
6	Check all detectors and devices with proper tags.	NA	
7	Check the abort switch is deadman type.	NA	
8	Check that the control unit is properly installed.	✓	
9	Check the control panel wiring termination as per supplier drawings.	✓	
10	Check the control panel is properly identified.	✓	
11	Check the agent container location in correct position.	NA	
REMARKS AND OBSERVATIONS : <div style="height: 40px; border: 1px solid black;"></div>			
OK: NO OBJECTION, NA: NOT APPLICABLE, PL: PUNCH LIST.			
COMPANY	PETROJET	ENPPI	PPC
NAME			
SIGNATURE			
DATE			

PRE-COMMISSIONING CHECK LIST GASEOUS FIRE EXTINGUISHING SYSTEM LP-05 A			
PROJECT TITLE : EGPC Crude Oil Tank Farms Project, Agrood Area 30 (Module-01)			
PROJECT NUMBER : 1251-100		DISCIPLINE : Loss Prevention	
SYSTEM NAME :Electrical Power Module-1 System		SYSTEM ID :030-EL-017	
SUB-SYSTEM NAME :Electrical Power Module-1 System		SUB-SYSTEM ID :030-EL-017	
ITEM TAG No. :030XA029		AREA : 30	
REF. DWGs/DOCs :030XA029			
No.	DESCRIPTION	RESULT OK/NA/PL	PL ITEM No.
12	Check the agent container are fastened.	NA	
13	Check the container filling arrow pointed to green area.	NA	
14	Check the non return valve orientation.	NA	
15	Check the flexible hose installation.	NA	
16	Check the abort switch is deadman type.	NA	
17	Check wiring is properly installed as per drawing.	✓	
18	Check the power supplied for control unit from separate dedicated source.	✓	
REMARKS AND OBSERVATIONS : <div style="height: 40px; border: 1px solid black;"></div>			
OK: NO OBJECTION, NA: NOT APPLICABLE, PL: PUNCH LIST.			
COMPANY	PETROJET	ENPPI	PPC
NAME			
SIGNATURE			
DATE			


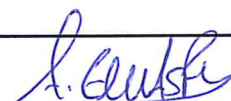
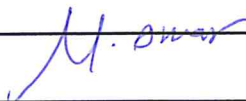
PRE-COMMISSIONING CHECK LIST GASEOUS FIRE EXTINGUISHING SYSTEM LP-05 A			
PROJECT TITLE : EGPC Crude Oil Tank Farms Project, Agrood Area 30 (Module-01)			
PROJECT NUMBER : 1251-100		DISCIPLINE : Loss Prevention	
SYSTEM NAME : Electrical Power Module-1 System		SYSTEM ID : 030-EL-017	
SUB-SYSTEM NAME : Electrical Power Module-1 System		SUB-SYSTEM ID : 030-EL-017	
ITEM TAG No. : 030XA031		AREA : 30	
REF. DWGs/DOCs : 030XA031			
No.	DESCRIPTION	RESULT	PL
		OK/NA/PL	ITEM No.
1	Check that the piping is installed as per design drawings. i.e. length, size,...etc	NA	
2	Check that the nozzle is properly oriented.	NA	
3	Check that the detection device is in proper location.	NA	
4	Check that the detection device model number as per data sheet.	NA	
5	Check the manual station is properly installed and accessible.	NA	
6	Check all detectors and devices with proper tags.	NA	
7	Check the abort switch is deadman type.	NA	
8	Check that the control unit is properly installed.	✓	
9	Check the control panel wiring termination as per supplier drawings.	✓	
10	Check the control panel is properly identified.	✓	
11	Check the agent container location in correct position.	NA	
REMARKS AND OBSERVATIONS : <div style="height: 40px; border: 1px solid black;"></div>			
OK: NO OBJECTION, NA: NOT APPLICABLE, PL: PUNCH LIST.			
COMPANY	PETROJET	ENPPI	PPC
NAME			
SIGNATURE			
DATE			

PRE-COMMISSIONING CHECK LIST GASEOUS FIRE EXTINGUISHING SYSTEM LP-05 A			
PROJECT TITLE : EGPC Crude Oil Tank Farms Project, Agrood Area 30 (Module-01)			
PROJECT NUMBER : 1251-100		DISCIPLINE : Loss Prevention	
SYSTEM NAME :Electrical Power Module-1 System		SYSTEM ID :030-EL-017	
SUB-SYSTEM NAME :Electrical Power Module-1 System		SUB-SYSTEM ID :030-EL-017	
ITEM TAG No. :030XA031		AREA : 30	
REF. DWGs/DOCs :030XA031			
No.	DESCRIPTION	RESULT OK/NA/PL	PL ITEM No.
12	Check the agent container are fastened.	NA	
13	Check the container filling arrow pointed to green area.	NA	
14	Check the non return valve orientation.	NA	
15	Check the flexible hose installation.	NA	
16	Check the abort switch is deadman type.	NA	
17	Check wiring is properly installed as per drawing.	✓	
18	Check the power supplied for control unit from separate dedicated source.	✓	
REMARKS AND OBSERVATIONS : <div style="height: 40px; border: 1px solid black;"></div>			
OK: NO OBJECTION, NA: NOT APPLICABLE, PL: PUNCH LIST.			
COMPANY	PETROJET	ENPPI	PPC
NAME			
SIGNATURE			
DATE			

10000-Z-000-EK7-TMP-0088 (03/14)

PRE-COMMISSIONING CHECK LIST GASEOUS FIRE EXTINGUISHING SYSTEM LP-05 A			
PROJECT TITLE : EGPC Crude Oil Tank Farms Project, Agrood Area 30 (Module-01)			
PROJECT NUMBER : 1251-100		DISCIPLINE : Loss Prevention	
SYSTEM NAME : Electrical Power Module-1 System		SYSTEM ID : 030-EL-017	
SUB-SYSTEM NAME : Electrical Power Module-1 System		SUB-SYSTEM ID : 030-EL-017	
ITEM TAG No. : 030XA032		AREA : 30	
REF. DWGs/DOCs : 030XA032			
No.	DESCRIPTION	RESULT	PL
		OK/NA/PL	ITEM No.
1	Check that the piping is installed as per design drawings. i.e. length, size,...etc	NA	
2	Check that the nozzle is properly oriented.	NA	
3	Check that the detection device is in proper location.	NA	
4	Check that the detection device model number as per data sheet.	NA	
5	Check the manual station is properly installed and accessible.	NA	
6	Check all detectors and devices with proper tags.	NA	
7	Check the abort switch is deadman type.	NA	
8	Check that the control unit is properly installed.	✓	
9	Check the control panel wiring termination as per supplier drawings.	✓	
10	Check the control panel is properly identified.	✓	
11	Check the agent container location in correct position.	NA	
REMARKS AND OBSERVATIONS : <div style="height: 40px; border: 1px solid black;"></div>			
OK: NO OBJECTION, NA: NOT APPLICABLE, PL: PUNCH LIST.			
COMPANY	PETROJET	ENPPI	PPC
NAME			
SIGNATURE			
DATE			

10000-Z-000-EK7-TMP-0088 (03/14)

PRE-COMMISSIONING CHECK LIST GASEOUS FIRE EXTINGUISHING SYSTEM LP-05 A			
PROJECT TITLE : EGPC Crude Oil Tank Farms Project, Agrood Area 30 (Module-01)			
PROJECT NUMBER : 1251-100		DISCIPLINE : Loss Prevention	
SYSTEM NAME :Electrical Power Module-1 System		SYSTEM ID :030-EL-017	
SUB-SYSTEM NAME :Electrical Power Module-1 System		SUB-SYSTEM ID :030-EL-017	
ITEM TAG No. :030XA032		AREA : 30	
REF. DWGs/DOCs :030XA032			
No.	DESCRIPTION	RESULT OK/NA/PL	PL ITEM No.
12	Check the agent container are fastened.	NA	
13	Check the container filling arrow pointed to green area.	NA	
14	Check the non return valve orientation.	NA	
15	Check the flexible hose installation.	NA	
16	Check the abort switch is deadman type.	NA	
17	Check wiring is properly installed as per drawing.	✓	
18	Check the power supplied for control unit from separate dedicated source.	✓	
REMARKS AND OBSERVATIONS : <div style="height: 40px; border: 1px solid black;"></div>			
OK: NO OBJECTION, NA: NOT APPLICABLE, PL: PUNCH LIST.			
COMPANY	PETROJET	ENPPI	PPC
NAME			
SIGNATURE			
DATE			



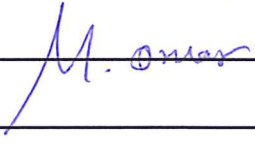
PRE-COMMISSIONING CHECK LIST GASEOUS FIRE EXTINGUISHING SYSTEM LP-05 A

PROJECT TITLE	: EGPC Crude Oil Tank Farms Project, Agrood Area 30 (Module-01)		
PROJECT NUMBER	: 1251-100	DISCIPLINE	: Loss Prevention
SYSTEM NAME	: Electrical Power Module-1 System	SYSTEM ID	: 030-EL-017
SUB-SYSTEM NAME	: Electrical Power Module-1 System	SUB-SYSTEM ID	: 030-EL-017
ITEM TAG No.	: 030XA033	AREA	: 30
REF. DWGs/DOCs	: 030XA033		

No.	DESCRIPTION	RESULT	PL
		OK/NA/PL	ITEM No.
1	Check that the piping is installed as per design drawings. i.e. length, size,...etc	NA	
2	Check that the nozzle is properly oriented.	NA	
3	Check that the detection device is in proper location.	NA	
4	Check that the detection device model number as per data sheet.	NA	
5	Check the manual station is properly installed and accessible.	NA	
6	Check all detectors and devices with proper tags.	NA	
7	Check the abort switch is deadman type.	NA	
8	Check that the control unit is properly installed.	✓	
9	Check the control panel wiring termination as per supplier drawings.	✓	
10	Check the control panel is properly identified.	✓	
11	Check the agent container location in correct position.	NA	

REMARKS AND OBSERVATIONS :

OK: NO OBJECTION, NA: NOT APPLICABLE, PL: PUNCH LIST.

COMPANY	PETROJET	ENPPI	PPC
NAME			
SIGNATURE			
DATE			

PRE-COMMISSIONING CHECK LIST GASEOUS FIRE EXTINGUISHING SYSTEM LP-05 A			
PROJECT TITLE : EGPC Crude Oil Tank Farms Project, Agrood Area 30 (Module-01)			
PROJECT NUMBER : 1251-100		DISCIPLINE : Loss Prevention	
SYSTEM NAME :Electrical Power Module-1 System		SYSTEM ID :030-EL-017	
SUB-SYSTEM NAME :Electrical Power Module-1 System		SUB-SYSTEM ID :030-EL-017	
ITEM TAG No. :030XA033		AREA : 30	
REF. DWGs/DOCs :030XA033			
No.	DESCRIPTION	RESULT	PL
		OK/NA/PL	ITEM No.
12	Check the agent container are fastened.	NA	
13	Check the container filling arrow pointed to green area.	NA	
14	Check the non return valve orientation.	NA	
15	Check the flexible hose installation.	NA	
16	Check the abort switch is deadman type.	NA	
17	Check wiring is properly installed as per drawing.	✓	
18	Check the power supplied for control unit from separate dedicated source.	✓	
REMARKS AND OBSERVATIONS : <div style="height: 40px; border: 1px solid black;"></div>			
OK: NO OBJECTION, NA: NOT APPLICABLE, PL: PUNCH LIST.			
COMPANY	PETROJET	ENPPI	PPC
NAME			
SIGNATURE			
DATE			



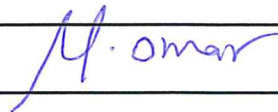
PRE-COMMISSIONING CHECK LIST GASEOUS FIRE EXTINGUISHING SYSTEM LP-05 A



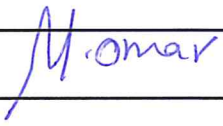
PROJECT TITLE	: EGPC Crude Oil Tank Farms Project, Agrood Area 30 (Module-01)		
PROJECT NUMBER	: 1251-100	DISCIPLINE	: Loss Prevention
SYSTEM NAME	: Electrical Power Module-1 System	SYSTEM ID	: 030-EL-017
SUB-SYSTEM NAME	: Electrical Power Module-1 System	SUB-SYSTEM ID	: 030-EL-017
ITEM TAG No.	: 030XA034	AREA	: 30
REF. DWGs/DOCs	: 030XA034		

No.	DESCRIPTION	RESULT	PL
		OK/NA/PL	ITEM No.
1	Check that the piping is installed as per design drawings. i.e. length, size,...etc	NA	
2	Check that the nozzle is properly oriented.	NA	
3	Check that the detection device is in proper location.	NA	
4	Check that the detection device model number as per data sheet.	NA	
5	Check the manual station is properly installed and accessible.	NA	
6	Check all detectors and devices with proper tags.	NA	
7	Check the abort switch is deadman type.	NA	
8	Check that the control unit is properly installed.	✓	
9	Check the control panel wiring termination as per supplier drawings.	✓	
10	Check the control panel is properly identified.	✓	
11	Check the agent container location in correct position.	NA	

REMARKS AND OBSERVATIONS :

OK: NO OBJECTION, NA: NOT APPLICABLE, PL: PUNCH LIST.

COMPANY	PETROJET	ENPPI	PPC
NAME			
SIGNATURE			
DATE			

PRE-COMMISSIONING CHECK LIST GASEOUS FIRE EXTINGUISHING SYSTEM LP-05 A			
PROJECT TITLE : EGPC Crude Oil Tank Farms Project, Agrood Area 30 (Module-01)			
PROJECT NUMBER : 1251-100		DISCIPLINE : Loss Prevention	
SYSTEM NAME :Electrical Power Module-1 System		SYSTEM ID :030-EL-017	
SUB-SYSTEM NAME :Electrical Power Module-1 System		SUB-SYSTEM ID :030-EL-017	
ITEM TAG No. :030XA034		AREA : 30	
REF. DWGs/DOCs :030XA034			
No.	DESCRIPTION	RESULT	PL
		OK/NA/PL	ITEM No.
12	Check the agent container are fastened.	NA	
13	Check the container filling arrow pointed to green area.	NA	
14	Check the non return valve orientation.	NA	
15	Check the flexible hose installation.	NA	
16	Check the abort switch is deadman type.	NA	
17	Check wiring is properly installed as per drawing.	✓	
18	Check the power supplied for control unit from separate dedicated source.	✓	
REMARKS AND OBSERVATIONS : <div style="height: 40px; border: 1px solid black;"></div>			
OK: NO OBJECTION, NA: NOT APPLICABLE, PL: PUNCH LIST.			
COMPANY	PETROJET	ENPPI	PPC
NAME			
SIGNATURE			
DATE			



Project: 01251-100
CRUDE OIL TANK FARM PROJECT (AGROOD AREA)



System ID	030-EL-017
System Description	Electrical Power Module-1 System

12.11- Electrical Supplier Check Lists & Reports



Project: 01251-100
CRUDE OIL TANK FARM PROJECT (AGROOD AREA)



System ID	030-EL-017
System Description	Electrical Power Module-1 System

13- Electrical Commissioning

System ID	030-EL-017
System Description	Electrical Power Module-1 System

13.01- Electrical -Commissioning Check Lists

System ID	030-EL-017
System Description	Electrical Power Module-1 System

13.02- Electrical Supplier Check Lists & Reports



Project: 01251-100
CRUDE OIL TANK FARM PROJECT (AGROOD AREA)



System ID	030-EL-017
System Description	Electrical Power Module-1 System

14- Red Marked-up Drawings



Project: 01251-100
CRUDE OIL TANK FARM PROJECT (AGROOD AREA)



System ID	030-EL-017
System Description	Electrical Power Module-1 System

14.01- P&ID



Project: 01251-100
CRUDE OIL TANK FARM PROJECT (AGROOD AREA)



System ID	030-EL-017
System Description	Electrical Power Module-1 System

14.02- Instrumentation Drawings



Project: 01251-100
CRUDE OIL TANK FARM PROJECT (AGROOD AREA)



System ID	030-EL-017
System Description	Electrical Power Module-1 System

14.03- Electrical Drawings